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UREMIA *

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In his Harvey lecture on "Nephritis," Theodore Janeway stated three problems, the solution of which are necessary for a clearer conception of the symptoms of renal disease—edema, vascular hypertension and uremia. At that time, 1913, I was studying uremia in the belief that the solution of this question might aid materially in solving the others and possibly throw light on the essentially most significant problem, namely, the mode of production of nephritis generally.

By uremia we understand an intoxication that is likely to supervene in nephritis, manifested by psychomotor disorders. The term takes origin in the fact disclosed by the first chemical studies of body fluids of nephritics—the increase of urea in the blood and cerebrospinal fluid, which was first detected by Christison and Babbington. It was a natural inference that the retention in the body of considerable amounts of substances known to be waste products, since they were present in normal urine, should be considered responsible for the conspicuous symptom of epileptiform convulsions. The initial error in this deduction was the ancient enemy of medical science—faulty logic—and it required the energies of some of the best minds for the next half century to correct the conception. Owen Rees, it is true, objected to the current theory on the ground that larger amounts of urea were recovered from the blood in a case of obstructive anuria than had been noted in any case of Bright's disease, yet there had been in his case no nervous disturbances, no convulsive seizures. Subsequent results of animal experimentation cast a shadow of doubt on the theory which, however, was but slightly altered since ammonium carbonate, the supposed precursor of urea, focused attention (Frerichs) for a generation, until Oppler, under Hoppe-Seyler's direction, finally disproved the hypothesis.

The attention of students with a chemical bent turned to the extractives; but as theories based on the idea of the toxic nature of urinary elements weakened, the morbid anatomists advanced other theories based on supposed changes in the central nervous system, as inflammation of the arachnoid, and edema of the brain, general or local. Traube's attention was arrested by the frequency of serous effusions in nephritis, and this fact, together with cardiac hypertrophy and the increased arterial pressure, led him into a complex mechanical explanation of cerebral edema.

The history of these early investigations is here merely outlined because no abiding truth was revealed, no principle of wider application determined. This history is also an exception in medicine since not here, as has so often happened, did the clinician separate out of chaotic disorder the several disease entities and state clearly the problem for solution. To a confusion of clinical entities must be ascribed the barren results of carefully done work. For example, the intimate relation between cardiac disorders and renal disease or their similarities could not have been duly appreciated till a later date, nor the types of cerebral accident that may result.

Now, while the term uremia may be inexact, yet it has won a general usage as descriptive of several symptom complexes accompanying nephritis. These symptoms fall roughly into groups. Thus, headache, vomiting, diarrhea and amaurosis are styled toxic; then there are psychic symptoms: hallucinatory-paranoid states, stupor and coma, and motor symptoms: transient paralyses, paresis and hemiplegia and convulsions. Careful clinical studies have shown that of these symptoms some are likely to occur together, while others are more or less fortuitous; and so there has grown up a conception of types of uremia. The convulsive or epileptiform type was the earliest one recognized in Bright's time. With this epileptiform uremia, headache and sudden amaurosis are often precursors, and coma a sequel. The convulsive seizures and not infrequent recovery are the striking features. A second type never displays a sudden onset, but is marked by gradually deepening coma, unaccompanied by psychic disorder or signs of motor irritation. A third type shows visual disturbances only when demonstrable lesions of the eye are present (hemorrhages, exudate, neuritis, which is in contrast to the blindness of the first type of uremia), and is prone to gastro-intestinal and psychic disorders, of which the latter are commonly hallucinations and paranoid delusions. Convulsions do not occur, lethargy and somnolence are the rule, and coma is terminal.

Symptoms are associated into groups, not alone because they seem most commonly thus associated in disease, but also because each of these symptom complexes appears often as a result of certain disturbances in renal function and, furthermore, these uremic types have each a more or less clearly defined disorder of metabolism. It will be my endeavor to present the evidence for these statements.

It has doubtless been a great handicap to study, that pathology has not been able to discover in uremia lesions of the central nervous system with sufficient constancy to correct clinical judgment. The diagnosis of uremia can only be suspected from the character of organic change found postmortem. Aside from the lesions in the kidney and occasionally ulceration in the

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* Harvey Lecture, read before the New York Academy of Medicine, Nov. 20, 1920.

lower gastro-intestinal tract, uremia leaves inconstant signs. Since the symptoms are so largely those related to the central nervous system, attention has been given chiefly to search for cellular alteration in the brain and cord.

EDEMA OF THE BRAIN

It is well known that some increase of fluid in the ventricles and meninges postmortem is only an expression of the agonal transudation that occurs in all serous lined cavities, and is therefore of slight significance. This explains the edema of the brain noted so constantly by the early students, notably Rees. The question of cerebral edema must be approached with due caution because the problem has never received adequate attention. Very nice considerations are involved in any attempt to explain an increase of fluid in a closed chamber, such as the cranial cavity. Suffice it here to say that the larger problem is not comprehended; and in many instances in which the increase in fluid is but moderate we cannot be sure of cerebral edema unless there is an accompanying disorder, such as hyperemia, to explain it. Roughly, there is differentiated an active and a passive edema; and although the weight of Traube's name focused attention on edema of the brain as an explanation for uremia, the part played by the general circulation in this edema, and hence by myocardial disease, was not appreciated till von Recklinghausen's work. We recognize now that edema may be due to circulatory disorders and that in nephritis there is especially apt to supervene as a late complication an edema resultant on myocardial insufficiency. This fact, now appreciated, often confused clinicians of the last century.

Quite different in causation probably is the edema associated with the lesion styled serous encephalitis. Not confined to the meninges, the edema of the central nervous system in uremia has more similarity to serous encephalitis than to purely passive edema. But with our knowledge of serous transudation, agonal or postmortem, this observation cannot be forced. The question of edema generally is an unsolved problem and one that might profitably be attacked by physiochemical methods.

In its highest severity, edema of the brain appears with constancy in but one type of uremia, that type in which stupor and coma without convulsion, without psychic or motor disorder, is the prominent nervous symptom. The clinical picture, so far as referable to the nervous system, and the neuropathology are then in similarity with that of chronic alcoholism. That this edema of the brain may bear a causal relation to stupor or coma is suggested, at least, by the transient clearing of the mental state following removal of cerebrospinal fluid, which in this type of uremia is usually under increased tension. Cerebral edema seems in these cases only a part of the general anasarca that is the prominent clinical symptom.

CEREBRAL HYPEREMIA

Definite cerebral hyperemia we have observed in only one type of uremia. Difficult to estimate and therefore uncertain in mild degrees, this hyperemia is in some cases beyond doubt, and in several instances it has been accompanied by numerous pin-point hemorrhages scattered generally throughout the brain substance. There was also at times edema, the nature of which is uncertain. In brief, these lesions are not to be differentiated from those seen in morphin poisoning. Now the interesting fact to us was that, while this picture is not seen with constancy, it was the significant lesion in some patients who died of convulsive uremia, and was not observed in other types. Edema in slight degree might or might not be present; it might often be absent, and then the neuropathology of epileptiform uremia stood, in some measure at least, differentiated from that of other types of uremia. A conservative deduction from these observations is that two types of lesions are notable in the central nervous system, and in their extreme degrees these lesions appear to be associated with definite groups of symptoms. Only so far do they suggest differences in causal factors.

TOXICITY

Since its recognition as a sequel to nephritis, uremia has been regarded generally as an intoxication, and efforts directed to determine the cause were largely made by chemical methods. Down to the time of Bourchard, it was believed that urine is poisonous or contains a poison. And since the epileptiform type of uremia was so easily differentiated, little attempt was made to discover variations in the clinical complex or to hunt for more than one immediate cause, all alike being a result of renal disease. Today we recognize that disorder of the functions of the kidneys may take several forms, and conceivably some variability in nervous symptomatology might be expected. It is generally accepted that nephritis may be characterized by imperfect nitrogen excretion, or in other cases by defect in salt and water excretion. And we observe cases in which the former condition prevails without evidence of the latter; hence, when the two occur together we recognize not a third type, but a mixed complex, at least from a physiologic aspect.

The older ideas held some truth, buried, nevertheless, in a maze of misconceptions. It has been known for ages that persistent anuria leads to death. Rees objected to Christison's theory of urea poisoning on the ground that anuria due to stone did not induce convulsions, although fatal. This observation has been repeatedly confirmed. It matters not whether anuria be due to obstruction of ureters, renal arteries or veins, or removal of both kidneys: the symptoms resulting are alike, the most notable being progressive weakness and an increasing somnolence, nausea, headache and stupor, terminating in death. None of the classical symptoms of epileptiform uremia are noted; amaurosis, palsies and convulsions are absent. The renal arteries or veins, or ureters, were ligated in a number of dogs which were observed carefully by us, but there was no clinical resemblance to a uremic picture of the convulsive type. I studied with the greatest care from day to day three patients who had been deprived of the only functioning kidney by emergency operations. In none of these was there the slightest evidence of irritability of the motor nervous system, or impairment of the psychic functions until the last days of life. None had amaurosis, muscle spasms, paralysis or convulsions. All alike experienced, first, weakness, slight vertigo and mental dulness; then, a tendency to sleep which lapsed into coma, with death on the ninth to eleventh day after the operation. The blood in all of these cases showed a higher concentration of nitrogen and urea than usually occurs with uremic patients. Similar symptoms were experienced by Hewlett [1] and his two assistants following the ingestion of large amounts of urea. In one experiment enough urea was taken to raise the blood-urea up to

1. Hewlett, A. W.; Gilbert, Q. O., and Wickett, A. D.: The Toxic Effects of Urea on Normal Individuals, Arch. Int. Med. 18: 636 (Nov.) 1916.

240 mg. per cent. All suffered from the same symptoms, differing only in degree: nausea, headache, vertigo, mental irritability, apathy and somnolence.

It is our conception that one type of uremia is due chiefly to the retention in the body of substances normally excreted in the urine. The conditions leading to anuria induce symptoms (weakness, somnolence, etc.) resembling in certain respects asthenic uremia, but there is not a complete reproduction of the complex. At first glance it would seem that these conditions of anuria are exact and perfectly analogous to those of nephritis, since they effect an extreme nitrogen retention. That this is not entirely true will appear on further examination of the problem.

ANURIA AND NITROGEN RETENTION

A number of years ago, Voit [2] studied the toxicity of urea and several other urine elements and found that he could feed dogs large amounts of urea in their food without apparent injurious result, provided the animals were permitted as much water as they desired. If, however, the water was limited to very small amounts or was withheld, symptoms such as vomiting, lethargy and ataxia developed. This observation contains a principle that is applicable to the conditions observed in chronic nephritis with nitrogen retention. This principle I must explain. We have been able to show in our studies of cases of chronic nephritis with nitrogen retention that the amount of nitrogen excreted in the urine bears a relation to the volume of urine, a fact that was determined in this way: Patients with no defect in water excretion were given diets containing a definite known amount of nitrogen, the only variable being water, and it was then observed that if we gave much water no nitrogen was retained in the body, all being excreted; but if water was limited to less than a liter a day, nitrogen was retained and after a period the blood analysis showed an increasing amount of urea and nonprotein nitrogen: in other words, an accumulation of nitrogenous waste. This is experimental confirmation of a well established clinical doctrine, namely, that these chronic nephritis patients with nitrogen retention require much water in order to eliminate the nitrogenous waste, because the diseased kidney can excrete only at a low level of concentration of urea. Senator warned of the danger of uremic symptoms if water is withheld.

It now becomes evident that the comparison of metabolism between anuria, on the one hand, and nephritis with nitrogen retention on the other, reveals an important difference. Both alike lose a definite amount of water through the lungs, but the patient with anuria loses no water through the kidney; consequently, even though nitrogenous substances are retained, water also is retained and the concentration of nitrogen in the tissues is thus relieved for some time. Furthermore, in nephritis the kidney excretes selectively, some substances with relative ease, others with increasing difficulty, so that there results in disease selective concentration. Not all the nitrogen components of urine are retained in equal degree, some being retained more than others. This fact defines a contrast in the kind of nitrogen retention of nephritis to that of anuria. With anuria, all the substances normally excreted in the urine are held back in the body; with nephritis, on the contrary, some are retained more than others. Now does the examination of blood in these two conditions accord with theory? In nephrectomized dogs we noted that urea formed 60 per cent. or more of the nonprotein nitrogen. In the anuria of mercury poisoning the urea ran as high as 90 per cent. of the nonprotein nitrogen in some cases, and was generally high. With uremia, however, while both urea and nonprotein nitrogen may be high, the urea nitrogen forms a smaller percentage of the total than with anuria, seldom more than 65 per cent., and often less than 50 per cent. of the total. We find, then, just the difference we should expect theoretically. In chronic interstitial nephritis this process of heaping up nitrogen waste is gradual and the cells become tolerant to abnormal amounts of these urinary elements. An excellent example of the effects of retention in the body of nitrogenous waste products consequent to desiccation is observed in cholera; a uremic syndrome is one of the late complications of cholera, although the accompanying nephritis is not of severe degree. Here the extreme loss of water from the body in the stools results in actual desiccation; the specific gravity of the blood may rise to 1.060. Accompanying this there is also an increase of nitrogen waste, owing to an increased catabolism of protein consequent to the infection. A similar condition of affairs I have observed in diphtheria, anuria due to desiccation leading to asthenic uremia, and at necropsy no significant lesion being demonstrable in the kidneys. The dryness of the tissues in these cases is well known.

But the best illustration of the relation which water excretion bears to the onset of uremic symptoms in nephritis with nitrogen retention is offered by the effects of diuresis. Addison remarked that when certain cases of Bright's disease with edema developed diuresis and the edema subsided, uremia resulted. This is now a common observation, and uremia may be not only a consequence of water loss through the kidneys but may also follow diaphoresis or restriction of the fluid ingested. All of these conditions, diuresis, diaphoresis or restricted fluid ingestion, result in a concentration of waste products in blood and tissues in cases of nephritis. There is not, then, the perfect analogy between anuria and the nitrogen retention of nephritis that has been supposed.

CHEMISTRY OF THE BLOOD

The chemistry of the blood has been well studied in asthenic uremia because this is the most common type. It is now well known that all of the nitrogenous bodies found in urine are generally increased in the blood, some bodies more than others. Besides this we have observed that the amounts of nitrogen retained in the body by very sick patients (the difference between the nitrogen ingested in food and that excreted in the urine, feces, etc.) could not be accounted for by the nonprotein nitrogen of the total blood in the body. These two facts led us to analysis of tissues postmortem. In brief, it has been quite definitely learned, I think, that the tissues retain more of these catabolic products than does the blood. In fact, there is some ground for opinion that the excess in blood expresses a supersaturation of tissues. But this is not demonstrated.

In the range of problems yet unsolved is the question of the physical state of these organic compounds in the body fluids. Are they merely in solution or are they in combination with colloids? As yet not determined, the latter state seems, however, more probable, and these colloidal compounds would then be directly influenced by various conditions, such as hydrogen-ion concentration. It will be recalled that the acidosis theory of uremia has repeatedly been advanced, at first by

2. Voit: Ztschr. f. Biol. 4: 140, 1868.

Senator; and while acidosis is often detectable, it usually occurs in significant degree only in the terminal period of life. Exceptionally, however, acidosis may be a prominent factor,[3] and it is of interest that appropriate alkaline therapy then ameliorites or altogether relieves the uremic symptoms. This is an unusual uremic manifestation.

We see, then, that asthenic uremia is a complex syndrome, of which I have attempted to indicate only the chief components. The objection to the hypothesis of intoxication by excretory compounds loses force on careful scrutiny, since nephritis is comparable to anuria only in certain aspects. In one case, anuria, we observe the effects of a sudden overwhelming dosage; in the other case, asthenic uremia, we observe the results of slow cumulative poisoning from the same elements but in different proportions. There is as much correspondence of symptoms in the two conditions as we should expect, more similarity, in fact, than exists between the clinical effects of large toxic doses of known poisons and the slow cumulative effects of that poison. There is also found the difference in chemical composition of body fluids that we should theoretically expect to find.

For a generation after Bright, the term uremia was applied chiefly to a symptom complex characterized by epileptiform convulsions. The extension of the definition to cover the various types of intoxications that we have been discussing was of later development. The striking features of the epileptiform type of uremia in some respects seems to differentiate a separate and peculiar entity. In many cases, without premonitory symptoms, there occur sudden and violent convulsive seizures, transient palsies and hemiplegia, and a peculiar form of blindness unassociated with detectable cause in retina or nerve; with a recovery and return to health in some instances (as Addison observed). These symptoms are in such sharp contrast to asthenic uremia that they suggest the effects of a peculiar toxin. The disorder has always been regarded as an intoxication. The explosive character of the symptoms aid correct diagnosis and study, in contrast to the insidious onset of other types of uremia easily confused with various cerebral accidents.

From time to time, attempts have been made to demonstrate the presence of a toxic substance in the blood from cases of convulsive uremia; but none have achieved convincing results. Nor has it been shown that urine from these patients is either less toxic or more toxic than normal. Each one of the organic substances excreted in urine was tested for its toxic properties a generation ago but with no result, unless one consider the experiment of Landois, who applied creatinin to the brain cortex and elicited convulsive seizures.

If convulsive uremia is an intoxication, as the older students conjectured, then the toxin is probably recoverable from the blood or tissues.

When the urine is subjected to fractional analysis, we find that the various bodies composing the noncolloidal nitrogen are known down to a small percentage. Thus, from 75 to 85 per cent. is urea, the remainder ammonia, uric acid, creatinin, etc., and only an insignificant fraction is in doubt. Now, turning to blood, the nonprotein nitrogen or filtrate nitrogen is composed of known elements only in part. The sum of the known bodies totals, at most, only about 80 per cent. of the total filtrate nitrogen, and this sum may fall to less than 50 per cent. of the total nonprotein nitrogen of the blood. Much less is known concerning the crystalloids of blood than of urine. Since we observed that the unknown fraction was large, not only in nephritis but also in the blood of healthy persons generally, our first suspicion was that amino-acids made up a considerable part of this unknown nitrogen. But this idea proved to be incorrect. The amino-acid fraction varies but little and is not appreciably increased in nephritis with nitrogen retention. But this fact had considerable interest to us because, since this undetermined nitrogen is not composed of amino-acids, it is probably not destined for cellular nutrition, but, on the contrary, is a catabolic product, a precursor of some known urinary element. The definite fact gained from our studies in fractional blood analysis was that a large fraction of the noncolloidal nitrogen of blood consists of substances not found in urine. This fact opened certain possibilities for study which had seemed useless so long as the search for a uremic toxin was restricted to the well known ingredients of urine. From this time our energies were directed toward the isolation of various organic substances from the blood of patients suffering from convulsive uremia and testing these substances on animals. This is not the time to discuss intricate chemical methods employed for fractioning the blood, since they have been reported elsewhere. Suffice it to say that in analysis of blood two difficulties must be surmounted: The first is to separate all protein without effecting any chemical change in the protein molecule that might produce cleavage products; for this, only colloidal methods are suitable. The second difficulty to be met is the ever present possibility of altering some nontoxic substance into a toxic one through the action of chemical reagents. It is also to be remembered that chemical reagents might likewise transform a toxic body into one relatively harmless.

By the employment of colloidal methods, all protein can be separated from blood, and a water clear filtrate secured which gives no reaction for protein by any method. In general, the methods employed in our work were, with slight changes, those commonly used by biochemists for the separation of alkaloidal bases. An alcoholic solution of the hydrochlorids is finally secured from which a crystalline salt separates on the addition of gold or platinum chlorid. These crystals may be purified by recrystallization, broken up with hydrogen sulphid, and the pure base recovered for tests on animals.

ISOLATION OF A TOXIC BASE

Considering the relative body weight of man and guinea-pig, there should be sufficient toxin in 200 c.c. of blood from a uremic patient to produce definite symptoms in the guinea-pig. This we employed as our standard. The amount of toxin in 200 c.c. of blood is a fraction of a milligram. The base was dissolved in 1 c.c. of physiologic sodium chlorid solution and injected into the peritoneal cavity. This in outline was our method. We have now examined samples of blood from twenty-two cases of epileptiform uremia and from more than twice as many controls. For controls we used blood from other types of uremia and cases of anuria, epilepsy and also normal individuals. From none of these control samples has a toxic substance been isolated. When, however, the solution of the base from the blood of cases of epileptiform uremia is injected into a guinea-pig, the result has been uniformly fatal. The first symptoms usually appear about five minutes after the injection is made. There is rapid

3. Chace, A. F., and Myers, V. C.: Acidosis in Nephritis, J. A. M. A. 76:641 (March 6) 1920.

breathing and muscular twitching; this is often followed by a series of convulsive seizures, terminating in death in a few minutes. In other cases the animals show paresis of the hind legs, and have frequent bowel movements before convulsions develop. A few did not have definite convulsions, but severe twitching movements accompanying a stuporous state terminating in death. The result of our investigations seemed to indicate that the blood of patients with epileptiform uremia contains an organic base which is toxic. Usually not more than a few hundred cubic centimeters of blood can be taken from uremic patients, and from this blood only a small amount of the base can be recovered; the most recovered was weighed in milligrams.

The question then arose, Had we perhaps made this organic poison by our chemical procedures? The possibility remained that the blood of uremic patients may contain some substance not present in blood normally, or in other diseases, and that our chemical manipulation so altered the nature of this substance that it became toxic. To determine this possibility we dialyzed blood from cases of convulsive uremia against distilled water; then this diffusate was reduced to a small volume at low temperature and tested on animals. These diffusates are, of course, a mixture of all the noncolloids of blood. The interesting fact is that those samples from uremic patients were usually quite toxic, while other samples were inert.

The substance isolated is basic in its properties and forms crystalline salts with platinum and gold. Of its chemical nature we know next to nothing, because we have never been able to collect a sufficient quantity for analysis. Probably our chemical methods are imperfect and we either lose or destroy much in preparation. And in criticism of the work it is necessary to state that the existence of a toxin in uremic blood will not have been demonstrated until its chemical identity is known. That is the only assurance against the effect of reagents on unknown and possibly labile organic compounds. Apparently we are dealing with a substance as poisonous as strychnin, the amount of which in the body at any one time is possibly but a small fraction of a gram. We can easily conjecture several sources of such a poison in the precursors of known organic extractives; especially inviting is the idea of reversible reactions in this connection, whereby the accumulation in the body fluids of a catabolic product results in the increase also of its immediate precursor, which is often toxic but normally present in only the minutest amounts.

CONCLUSION

Uremia presents a complex and intricate problem, and I do not wish to leave the impression that we now understand the clinical manifestations and their immediate causation. My thesis has been to indicate some of the more important components in uremic states and the probable origin of these individual factors. As in nephritis we conceive of specific renal functions, and that the disorder of each alone or in combinations produces various symptoms, so in uremia our conception is of several simple types, each a resultant on a peculiar metabolic defect. These simple components or types, frequently merging in various combinations, effect the varied syndromes we name uremia.

Prevalence of Congenital Syphilis.—There are no very accurate figures in existence as to the prevalence of congenital syphilis in the community at large, but we have no hesitancy in definitely stating that it is not nearly as large as 8 per cent. —Solomon, *Social Hygiene* **6**:479 (Oct.) 1920.

DIVERTICULA OF THE ESOPHAGUS

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Until eight or ten years ago, comparatively few pulsion diverticula of the esophagus had been recognized and operated on, and the results up to that time had not been satisfactory on account of the mortality attending the radical operations for the cure of this condition. Within the last ten years a much larger number of these cases have been recognized, and much better results have been obtained by radical operations. There is, to begin with, a wider knowledge of the fact that these cases are by no means rare. The typical syndrome that they produce is more frequently recognized, and a definite demonstration of the size and

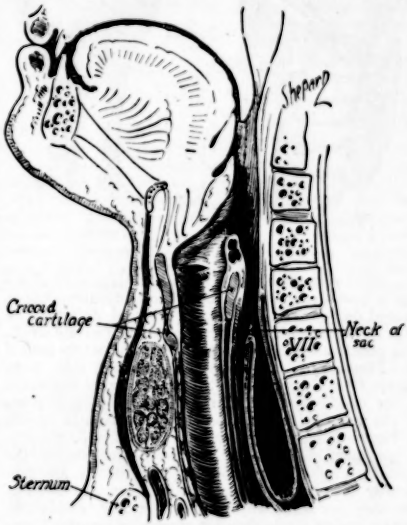

Fig. 1.—Sagittal section of neck, showing anatomic relations of hernial sac.

location of the diverticulum is now easily made by barium solution and roentgen-ray examination.

My own knowledge of the subject dates back about ten years, when I operated on my first patient. Since that time I have had the opportunity of studying a considerable number of cases with my colleague Dr. Bertram W. Sippy and his associates, and I shall present the facts that we have been able to obtain from this clinical experience, and describe a satisfactory method of operation which we have developed.

ANATOMY OF THE CONDITION

Diverticula of the esophagus, just as inguinal hernias, always occur at exactly the same point. Inguinal hernias always come out through the external abdominal ring. Pulsion diverticula present themselves at the junction of the esophagus and the pharynx in the median line posteriorly. At this point there is a triangular area where the oblique muscles of the pharynx and the transverse circular muscles of the esophagus meet,

leaving a small area not covered with musculature but simply by a subcutaneous layer (Fig. 2). In cases in which a diverticulum develops it is probable that there is more than the usual normal weakness at this point, probably a congenital absence of muscle fiber over a large area, permitting a pushing out of the mucosa and submucosa in the process of deglutition, so that with

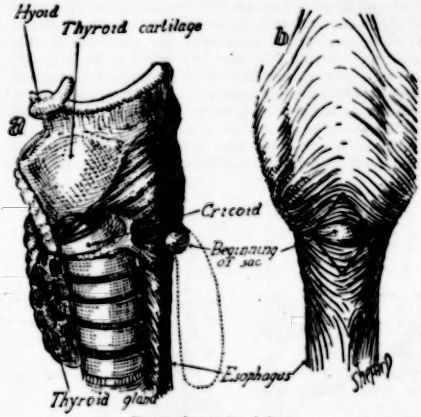

Fig. 2.—Anatomic relations.

this impulse applied to this weak area during swallowing, a pouch of mucous membrane and submucosa is pushed out through this small triangular defect. The neck of the pouch always remains comparatively small. The pouch itself may reach a size sufficient to hold 8 or 12 ounces, or even more. Developing, as it does, always from the same point, the sac occupies a position in the middle line behind the esophagus and in front of the vertebral column, as shown in sagittal section in Figure 1 and in cross-section in Figure 3.

We must not confuse pulsion diverticula of the esophagus with traction diverticula, which are frequently discussed at the same time. Traction diverticula may occur at any point, especially within the thorax, and as a rule they are caused by cicatricial contraction of some old inflammatory process drawing the wall of the esophagus outward and making more or less of a funnel-shaped diverticulum. These cases are seldom, if ever, of interest to the clinician except for the primary lesion that is responsible for their production.

DEGREES OF SEVERITY

Pulsion diverticula vary greatly in size and in the severity of the symptoms that they produce. Many of the small diverticula are of little moment and are associated simply with a little irritation in swallowing and an occasional slight regurgitation, and produce no great amount of discomfort to the patient and no serious impression on his health. On the other hand, diverticula of larger size may become a serious menace and may produce a fatal termination. As they increase in size and as the amount which they can contain not only increases but becomes a source of danger and discomfort from decomposition of the contents, swallowing becomes more and more difficult until, in the extreme picture, the patient in his effort to swallow simply fills up the diverticulum, and little food, even liquid food, passes into the esophagus; and the patient, unless relieved, may die of starvation. I have, in fact, had the opportunity in one case of seeing this serious picture of death from acidosis and starvation in the case of an esophageal diverticulum, and have had in one other case a patient in such serious condition that operation on the esophagus had to be preceded by a gastrostomy, so that we could feed the patient and get him in good enough condition for operation on the diverticulum. In minor cases in which the patient has a small diverticulum causing little distress, with the general health still unimpaired, one might safely permit these patients to go on without interference if they so desire until the symptoms become more annoying. On the other hand, because of the fact that these small diverticula can be cured so safely and readily, I think that good judgment would dictate an operation unless there is some special contraindication in the way of age or organic lesion to any operative interference. In the outspoken case in which the diverticulum is of fair size and the condition is an annoying one because of regurgitation and decomposition of food and the peculiar gurgling noise that is made while the patient is eating, which is sometimes so distressing and annoying that the family of the patient does not like to eat at the same table with him, there can be little doubt that the patient should be given the benefit of a radical operation.

OPERATIVE PROCEDURE

Until comparatively recently, this operation carried so much risk that it was regarded as a very serious undertaking and one which was not to be advocated unless there was great urgency. In the old operation the risk was due to the fact that the diverticulum was isolated and cut off and the opening closed with sutures, with the result that many of them leaked into the raw tissues of the operative wound and the patient often died of sepsis and from mediastinitis. The great risk of the older methods of handling these cases was the danger of infection from leakage. My colleague, Dr.

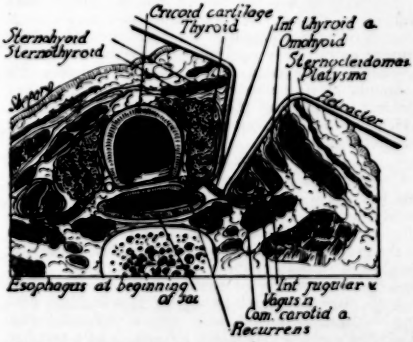

Fig. 3.—Cross-section of neck at cricoid cartilage, showing approach to esophagus at neck of sac.

Sippy, was deeply impressed by a case he had in which operation was performed by one of our best American surgeons and the patient had died from leakage and infection, and he felt that some operation should be developed that would eliminate this risk. After talking the matter over with him and studying a case that he

had referred to me, I devised a plan of operation which had for its purpose the obliteration of the diverticulum without carrying with it any risk of leakage, or at least

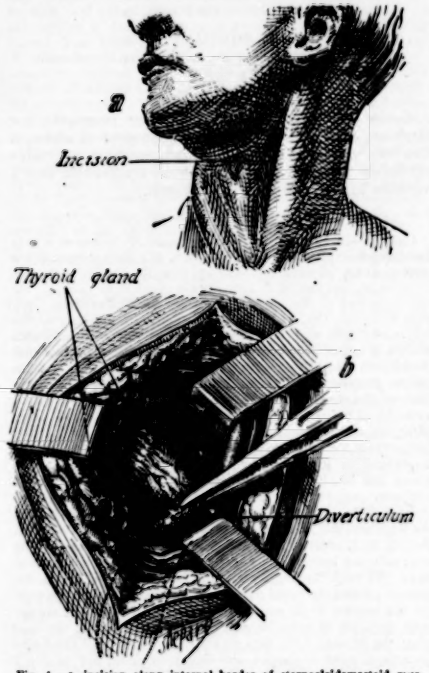

Fig. 4.—a, incision along internal border of sternocleidomastoid muscle; b, dissection made, sac pulled out.

reducing the dangers of leakage to a minimum. The plan which we have adopted is as follows:

First, we perform all of these operations under local anesthesia, using 0.5 per cent. procain or apothesin solution in distilled water with 1:200,000 epinephrin. I have made my incision usually on the left side. We infiltrate very thoroughly all the tissues on the inner side of the left sternocleidomastoid from the hyoid bone down to the sternum. We then divide the skin and superficial fascia for a distance of 5 or 6 inches along the inner border of the sternocleidomastoid (Fig. 4). The sternocleidomastoid is then drawn to the outer side with retractors, and the deep cervical fascia is divided parallel with the external incision, and the great vessels of the neck, the internal jugular and carotid, and the pneumogastric nerve are drawn to the outer side. The thyroid gland, sternohyoid and sternothyroid are drawn to the inner side. In the bottom of this wound one often finds interfering with the free exposure of the diverticulum the inferior thyroid artery; and when this is in the way it is doubly ligated and divided between the ligatures. This enables one to draw the thyroid gland well to the inner side and to expose the lateral wall of the esophagus; usually, if the patient swallows, the diverticulum comes into view. In most of our cases we have found that it lies in some loose areolar tissues and that it can be readily pulled into view. One must be careful to use dissecting forceps without teeth and carefully draw the diverticulum out from its bed so as to avoid rupturing its coats (Fig. 5). As the diverticulum is drawn out through the wound it looks like a hernial sac. One should remember that it is composed simply of mucous membrane and a submucous fibrous coat. If the diverticulum is small, not larger than one's thumb, that is to say, from 2 to 2½ inches long and not more than an inch across, it can be readily handled by invaginating it into the esophagus with three purse-string sutures, because a diverticulum of this size invaginated into the esophagus cannot do any harm. It is dangerous, however, as we known by experience, to invaginate a large diverticulum into the esophagus because of the danger of its being carried up in the effort of vomiting and closing the opening of the larynx. A diverticulum larger than the thumb should, therefore, be handled not by invagination alone but in the following way:

We should invaginate with three purse-string sutures of black silk or Pagenstecher linen one half of the diverticulum into the other half, as shown in Figure 5 *a*. Then the rest of the diverticulum should be obliterated by longitudinal sutures, six or eight, running parallel with the long axis of the diverticulum. When the operation is complete as far as the esophagus is concerned, it gives one the picture shown in Figure 5 *c*.

In a large diverticulum another method may be employed. Instead of the one I have just described, the diverticulum can be crushed at its center with a pair of heavy forceps, tied with a silk ligature, and the portion distal to the ligature then cut off with the electric cautery. The remains of the diverticulum, which are then no larger than one's thumb, can be treated by invaginating them into the esophagus with

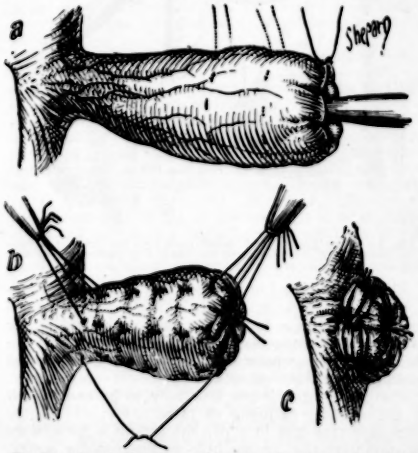

Fig. 5.—a, invagination of sac with purse-string sutures; b c, longitudinal sutures placed and tied.

three purse-string sutures, just as we handle the smaller diverticula (Fig. 6).

I am uncertain in my own mind which of these is the better plan. I believe that we should employ both methods in a series of cases to determine which shoul.l

be adopted as the standard procedure. I feel, however, that I am in a position to say with a good deal of positiveness that small diverticula, not larger than a thumb, can be safely handled and permanently cured by invagination into the esophagus and immediate closure of the external wound. On that basis I think it is probable that if we reduce in size by removing the excess portion all our diverticula cases to cases not larger than a thumb, it will furnish us a very satisfactory operation for all of these diverticula cases.

The remaining steps of the operation consist simply in leaving a soft rubber tube containing a strand of iodoform gauze in the center of the wound from the operative field of the esophagus to the middle of the external incision and closing the rest of the wound, this soft rubber drain containing the iodoform gauze to be removed at the end of forty-eight hours.

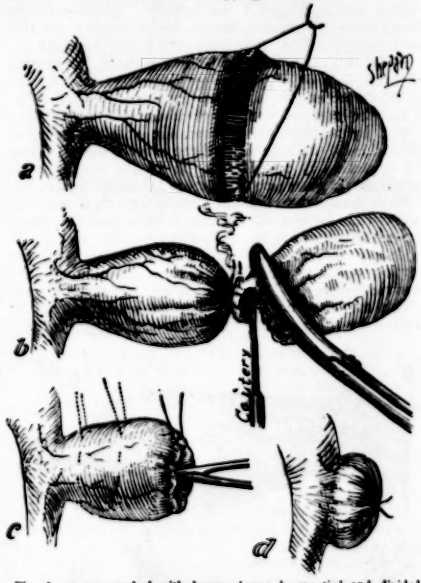

Fig. 6.—*a*, sac crushed with heavy clamp; *b*, sac tied and divided with cautery; *c*, *d*, invagination of sac stump with purse-string sutures.

The patient is fed in a simple way, by the introduction of a No. 14 American size catheter into the esophagus three times a day, fluid nourishment and plenty of water being introduced through this tube and the patient not being permitted to swallow until wound healing is complete—about ten days.

There are three points especially to be emphasized in the ordinary handling of these cases: (1) in the extremely rare case in which the patient is so reduced by starvation that he has little or no resisting power, the importance of performing a gastrostomy, feeding the patient and getting him into better condition before undertaking the operation on the diverticulum; (2) the importance of local anesthesia; (3) the importance of a technic such as I have described, or at least a technic that will prevent the risks of leakage and infection.

122 South Michigan Avenue.

SPONTANEOUS AND OPERATIVE CURE OF CIRRHOSIS OF THE LIVER

REPORT OF ILLUSTRATIVE CASES *

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Some writers give such a gloomy prognosis for cirrhosis of the liver that I am prompted to report a few cases, the outcome of which justifies a greater optimism. One of these cases is so remarkable that I venture to describe it at some length.

REPORT OF CASE WITH SPONTANEOUS CURE

Case 1.—David G., a boilermaker, aged 57, had been a very hard drinker all his life. For years, his daily consumption was a quart of beer and whisky mixed. He began to use tobacco at the age of 7, and always used it to excess. He was admitted to the surgical wards of the Philadelphia General Hospital, Oct. 11, 1910, on account of a fracture of the left wrist, and was later transferred to the medical wards with a diagnosis of cirrhosis of the liver. When I saw him he had marked ascites with general enlargement of the veins of the abdomen and a very typical caput medusae. In addition to the fracture of the wrist there was also an osteoarthritis of the right hip which rendered him very lame. Soon after his admission to the medical wards he had a profuse hemorrhage, in all probability from the lower end of the esophagus or from the stomach. Edema of the legs set in about the beginning of November. At the same time the abdomen became more tense, but the patient for a long time refused to be tapped. Finally he yielded. After the tapping, the liver and the spleen could be plainly felt. From this time, Feb. 6, 1911, onward the patient had to be tapped at varying intervals, the longest being twenty-four days, the shortest nine days. At each tapping, except the last one, from 3½ to 4½ gallons of straw-colored fluid were removed. We left the time for the tapping to the patient's own judgment; he would always wait until his distress became unbearable. Despite the tapping, the edema of the legs steadily increased until the limbs became of such enormous size that they could not be lifted or moved in the slightest degree. The scrotum was also greatly swollen. Toward the end of November, the patient grew irritable and peevish, and objected to every disturbance. At the beginning of December a persistent hiccup set in. At this time the irritable mental state gave place to a stupor—the patient lay constantly with his eyes shut; his face was sallow and of an ashen pallor. We did not think that he could live more than a few days. December 11, he was tapped for the thirty-sixth time, a gallon and a half of fluid being removed.

One day while I was making a casual examination—we had all kept aloof from him on account of his ugly disposition—I detected over the abdomen, particularly in the region of the liver and spleen, an exquisite friction, appreciable both to touch and to the ear. Over this area of friction there was also considerable tenderness. I then learned that the man had had much pain subsequent to the last tapping, and had been getting a small daily dose of morphin for its control.

To our great astonishment the abdomen did not fill up again. Not only was there no return of ascites, but all the edema of the hugely swollen legs and of the scrotum disappeared, and the man soon began to show again his pristine amiability. Eventually he was able to be up and about, and even left the hospital, to which, however, he returned, being unable, on account of his lame hip, to earn a living.

I have seen him many times since and have exhibited him in my lectures. There is no ascites; the venous distention and the caput medusae have disappeared; the liver and the spleen are of normal size, and but for the osteoarthritis the man is

* Read before the American Gastro-Enterological Association, May 3, 1920.

perfectly well. As far as I know he has not touched alcohol since his first admission to the medical wards at the hospital.

The urine during his sojourn never exceeded 40 ounces a day, despite the use of many diuretics, until after the last tapping, when it increased wonderfully, reaching as high as 105 ounces a day without any drugs. The specific gravity varied from 1.010 to 1.020; occasionally there was a trace of albumin; usually the urine was chemically and microscopically normal. The blood, about the middle period of his illness, showed: hemoglobin, 65 per cent.; red cells, 3,910,000; white cells 6,800. The differential blood count revealed polymorphonuclears, 83 per cent.; small lymphocytes, 11 per cent.; large lymphocytes, 6 per cent.

The total amount of fluid removed in the thirty-six tappings we estimated as from 140 to 150 gallons, or, in round numbers, nearly 1,200 pints, which, considering the specific gravity of the fluid, amounts to more than 1,200 pounds. This amount, representing about ten times the man's own weight, was removed in the space of nine months.[1]

The man's history and symptoms were typical of cirrhosis of the liver. He had no history of syphilis; in fact, no history of anything except extreme alcoholism. The edema of the legs and of the scrotum did not impress us as being due to cardiac disease. We were inclined to attribute it to thrombosis of the lower vena cava, but its spontaneous disappearance negatives that view. Probably pressure on the vena cava, aided by a general weakness of the circulation, was responsible for it.

How are we to explain the almost miraculous cure? Evidently, as indicated by the extensive friction, pain and tenderness, a fibrinous peritonitis followed the last tapping.[2]

The adhesions resulting from this peritonitis constituted a spontaneous Talma operation and sufficed to establish an adequate collateral circulation.

REPORT OF CASES OF CURE BY OPERATION

The other cases illustrate cure by the Talma operation.

CASE 2.—S. G., a man, aged 53, married, a retired iron merchant, native of Indiana, residing in Buffalo, came under my observation, Sept. 14, 1915. His father died of diabetes at the age of 75; his sister has diabetes and gallstone disease. His wife has never been pregnant. The patient has smoked to excess, but has never used alcohol or tea, and coffee only in moderation. He has never had syphilis, and the Wassermann test, which has been taken a number of times, has always been negative. During the preceding twenty years he had had attacks that from his description I should call biliary colic. In 1904, while in Edinburgh, he had a violent chill followed by jaundice, itching of the skin, and clay colored stools. Dr. Lauder Brunton diagnosed malaria. Ten years before I saw him, traces of sugar were found in the urine. Four years later he received some hypodermic injections, perhaps of mercury, which made him feel better.

In June, 1915, after eating three bananas, he had a violent attack of colic. Soon afterward the abdomen began to fill with fluid and it was necessary to tap him. He was tapped four times, at intervals of from ten days to two weeks; at each paracentesis from 4 to 7 quarts of fluid were drawn off. At the end of August he was sent by his physicians to the Mayo Clinic, where a laparotomy was performed; the liver being found the seat of a manifest cirrhosis, a Talma operation was performed. The patient was brought to me about a month later. I found the liver enlarged and finely nodular. The spleen was also enlarged and the abdomen was full of fluid. There were no hemorrhoids or caput medusae. October 7, he was tapped, and more than 6 quarts of straw-colored fluid were removed. After that the liver could be felt a hand's breadth below the costal arch; it appeared to be tough and leathery. In a little while fluid could again be demonstrated, but it did not reach any large amount. Eventually it became absorbed so that no further tapping was required. A year after the operation the patient was able to walk 5 miles without the slightest trouble and now, nearly four and a half years since the operation, he is well except that the urine occasionally contains traces of sugar and of albumin, with stray hyaline casts. The spleen is no longer palpable, and the liver has receded to the costal margin. Only one attack of abdominal pain of the nature of biliary colic has occurred since the operation.

CASE 3.—C. H. M., aged 62, born in Philadelphia, a house painter until a year and a half before I saw him, and since then a night watchman in a bakery, had been a heavy drinker of beer and whisky for twenty years; he had also consumed large amounts of tobacco. His wife was in the insane department of the Philadelphia General Hospital. He had never had any venereal or other serious disease, except an attack of influenza in the fall of 1918 which lasted about four weeks, but did not confine him to bed. He never had painters' colic or any symptoms of lead poisoning. He had always enjoyed excellent health.

In February, 1919, without any apparent cause, the abdomen began to swell. Getting no relief from treatment, he came to the Philadelphia General Hospital, April 20. He had the general appearance of a patient with cirrhosis of the liver. The muscles were rather wasted. The weight on admission was 140 pounds; his best weight had been 170 pounds. The heart presented nothing abnormal. Over the bases of the lungs posteriorly, a few râles could be heard. The abdomen was greatly distended, the veins much enlarged. The liver and spleen could not be palpated. May 3, he was tapped, 4½ gallons of straw-colored fluid being removed. After the tapping, the liver could be felt 3 inches below the costal margin; it was hard, finely nodular and tender. The spleen was not palpable. From that time on until October 22, he was tapped seventeen times at intervals ranging from four to twenty-three days, a total of nearly 50 gallons of fluid being withdrawn.

The urine was examined on twelve occasions and showed a few hyaline and granular casts, a trace of albumin, and occasional leukocytes. The specific gravity varied from 1.011 to 1.025. The phenolsulphonephthalein test was made four times with rather varying results; the elimination in the first hour was from 8 to 30 per cent., in the second from 5 to 20 per cent., and the total from 13 to 50 per cent. The Wassermann test with blood, spinal and peritoneal fluid was always negative. A blood count revealed: red cells, 4,800,000; white cells, 13,000; hemoglobin, 90 per cent. The blood sugar, after the administration of 100 gm. of dextrose at 11 a. m. (breakfast at 6 a. m.) was: at 11 a. m., 0.08 per cent.; at 12 m., 0.15 per cent.; at 1 p. m., 0.14 per cent. The peritoneal fluid was sterile and contained only a few leukocytes and epithelial cells.

As the patient was losing ground and had begun to dread the tapping, it was easy to persuade him to submit to an operation. This was performed under ether anesthesia, October 22, by Dr. T. Turner Thomas, of the surgical staff of the hospital. Just preceding operation, the patient was tapped, and about 9 quarts of fluid removed from the abdominal cavity. A right rectus incision about 4 inches long was made over the gallbladder. The remaining fluid was removed from the abdomen with towels. The upper surface of the liver, spleen and the adjacent peritoneum were rubbed with gauze until blood exuded slightly. The omentum was sutured to the anterior abdominal wall with four catgut sutures, and the lower portion of the omentum was sutured in the abdominal incision just beneath the skin. The incision was closed in the usual way. A short median line incision was made just above the pubis, and a rubber drainage tube inserted into the pelvis. On direct inspection during the operation, the liver was found somewhat enlarged, deeply congested and finely granular.

1. In A. J. C. Hare's "Walks in London" 2:311, I came across this legend, taken from the tomb of Dame Mary Page (1728): "In sixty-seven months she was tapped sixty-six times and had taken away two hundred and forty gallons of water without ever repining at her case or ever fearing the operation." This is a better record than that of David G.

2. It is not without interest that the intern who did the tapping was at that time on service in the erysipelas wards of the hospital.

Convalescence was uneventful, except for considerable gaseous distention of the abdomen and some looseness of the bowels. November 12, the sutures were removed from the upper incision; healing was complete and clean. December 23, the patient was retransferred to the medical wards, from which after a short stay he was dismissed virtually well.

COMMENT

The first case illustrates the wonderful *vis medicatrix naturae*. The other two cases show what may be accomplished by surgical means.

Cirrhosis of the liver is one of the few chronic nonbacterial visceral diseases—perhaps the only one—that may actually be cured. It is interesting that the cure of one of its outstanding symptoms, namely, the ascites, brings about arrest or cure of the cirrhotic process. We have been accustomed to look on hepatic cirrhosis as a progressive disease, and on ascites as a symptom of an advanced and, to all intents and purposes, an incurable stage. Yet, as the cases here reported and many others prove, after the ascites is abolished, not only does the cirrhosis make no further progress, but the damage that has been done to the liver seems to be compensated in a sufficient degree to permit a virtual restoration to health. When the cirrhosis is dependent on syphilis, such a striking therapeutic result is more easily comprehended. But in none of the cases here recorded could syphilitic infection be demonstrated.[3]

The cure of cirrhosis by the Talma operation cannot be due merely to the establishment of an adequate collateral circulation. That would be too mechanical a view of the matter. The liver itself must undergo a change, and probably also the spleen, the share of which in the pathogenesis of cirrhosis is, I believe, much greater than is generally conceded.

I have seen the Talma operation fail, owing, I believe, to my having postponed it too long.

If the intervals between tappings are decreasing, there is no use in waiting. The chances for a fortunate outcome from tapping alone, as in the first case, are so slight, and the action of drugs is so uncertain, that the patient should have the benefit of an operation if the circulation and the kidney function are such that the operation per se is justified. The operation is best performed when the abdomen is full of fluid. One should not be discouraged if a good result is not immediately apparent, and if the patient has to be tapped once or twice afterward. As Case 2 shows, the result may nevertheless be entirely satisfactory.

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3. Polyserositis, which exhibits a tendency to spontaneous cure, closely simulates cirrhosis of the liver. The three cases here reported gave no sign of being anything more than cirrhosis, evidence of general serous membrane involvement being lacking.

Conjugal and Congenital Syphilis.—The family of every syphilitic patient should be examined, irrespective of the stage of the disease or the symptomatology presented by the patient when first seen. If this is done, cases of conjugal and congenital syphilis will be discovered which would otherwise be neglected. They will often be found at a period when symptoms are not active, and thus treatment may be instituted before irreparable destructive lesions have occurred. An opportunity is offered to prevent the development of such disabling conditions as general paresis, tabes dorsalis, aneurysms, and the like. The possibility of bearing healthy children may be increased. Every clinic dealing with syphilitic patients, whether it is primarily a syphilitic clinic, a neurological clinic, a cardiac clinic, or an internal medicine clinic should be equipped with the machinery for bringing the members of the syphilitic's family to the clinic for examination.—Solomon, *Social Hygiene* **6**:487 (Oct.) 1920.

THE TREATMENT OF PERNICIOUS ANEMIA BY SPLENECTOMY

SECOND REPORT *

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AND
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In 1917, one of us (Giffin) published in THE JOURNAL [1] a review of the results in a series of thirty-one cases of pernicious anemia treated by splenectomy. In that series it was demonstrated that splenectomy was followed by a markedly favorable immediate reaction; 78 per cent. of those who recovered from operation showed very definite temporary improvement in their general condition and in their blood pictures. Moreover, there was at least a temporary reduction of the hemolytic factor evidenced by the fall in the values for bile pigments in the duodenal contents. The operative mortality was low. Two living patients had at that time maintained a satisfactory condition for one year, and three for nine months. Most of the patients, however, had been operated on so recently that conclusions concerning the postoperative duration of life could not be drawn.

Although the second report will be of interest as a further study of the influence of splenectomy on the various factors concerned in pernicious anemia, it will be of value chiefly as a statement of the postoperative life of these patients.

Including the thirty-one cases reviewed at the time of the first report, there are now (November, 1920) fifty in which operation was performed more than three years ago.

OPERATIVE MORTALITY

The immediate operative mortality of the series was 6 per cent. (three cases). The deaths occurred in the first nineteen cases. The reduction of mortality can be ascribed chiefly to more careful preoperative treatment and the exclusion of the anemias of the more acute type. The operative mortality in our patients with pernicious anemia has been considerably lower than in patients with splenic anemia, though not as low as in those with hemolytic jaundice. The small size of the spleen and the absence of adhesions reduce the surgical difficulties of splenectomy. The postoperative complications so common in cases of splenic anemia are absent, and excessive operative hemorrhage, after careful preoperative preparation, does not occur.

POSTOPERATIVE MORTALITY

Forty-two of the forty-seven patients who recovered from operation have died. Three patients died within three months of operation, one more within six months. A total of nine died within nine months; seventeen within one year; twenty-six within one and one-half years; thirty within two years; thirty-five within two and one-half years, and thirty-seven, 78.7 per cent. of those who recovered from operation, within three years. Ten patients (21.3 per cent.) survived the operation three years or longer. Thus, twenty-six patients (55 per cent.) died within eighteen months of operation. Twenty-two of these twenty-six died between the sixth and eighteenth months; seventeen of the twenty-six

* From the Division of Medicine, Mayo Clinic.

1. Giffin, H. Z.: A Report on the Treatment of Pernicious Anemia by Transfusion and Splenectomy, J. A. M. A. **68**: 429-432 (Feb. 10) 1917.

died between the ninth and eighteenth months. Twenty-one patients (45 per cent.) lived longer than eighteen months following operation. Of the ten who lived longer than three years, five are still alive and in good condition. Of the five now dead, two survived operation four years; one, forty-six months; one, forty-four months, and one, thirty-six months. The average duration of life for the entire group of forty-two patients who have died since splenectomy is nineteen months. In other words, five patients (10.6 per cent.) of the forty-seven who recovered from operation are still alive and in good condition, ten (21.3 per cent.) lived longer than three years, while twenty-one (45 per cent.) lived longer than eighteen months after operation.

SURVIVING PATIENTS

Five (10.6 per cent.) of the forty-seven patients who recovered from operation are alive. Two were splenectomized four years and nine months ago, one four years and eight months, one four years and five months, and one four years and three months. These five patients at the time of their last reports were in good general condition. The preoperative history of these patients in each case was approximately one year; the total average duration of the disease was considerably more than five years. Including with these the patients who survived operation at least three years but who are now dead, there is a total of ten (21.3 per cent.) in whom the total duration of disease before and after operation was four and one-half years or more. This is clearly longer than the average expectation of life of patients with pernicious anemia, and would seem to lead to the definite conclusion that life is prolonged in a considerable percentage of cases.

POSTOPERATIVE RELAPSES AND REMISSIONS

The relapses in pernicious anemia have seemed to be somewhat altered by splenectomy. It has been established that an improvement in the anemia occurs following operation, and that this continues for at least from three to six months, and in some cases longer. This improvement is associated with a diminution of hemolytic activity that is evidenced by the temporary decrease of jaundice and by the fall in the pigments observed in the examination of the duodenal contents. Later there are recurrences associated with all the symptoms and signs of the preoperative period. In our cases the anemia in general became more chronic in type, and, although in most instances the blood did not approximate normal, it was maintained at a fairly satisfactory level for a long time. Recurrences were liable to follow some acute infection, frequently a severe cold or "grip." During these recurrences the patients were less toxic than is the rule when patients are not splenectomized. The response to transfusion after splenectomy was very satisfactory; in fact, frequently two transfusions, and sometimes one, brought about a remission in patients in whom three or four ordinarily would have been necessary, if the patients had not been splenectomized. Still later in the disease, as would be expected, the benefit from transfusions decreased.

DEGENERATION OF THE SPINAL CORD

On neurologic examination before operation, twenty-nine patients (58 per cent.) showed definite evidence of sclerosis of the spinal cord. Eight more (16 per cent.) registered complaints suggestive of early involvement of the spinal cord, making a total of thirty-seven patients (74 per cent.).

The fifty patients have been divided into four groups: Group 1, patients who showed no evidence of degeneration of the spinal cord before or after splenectomy; Group 2, patients who showed evidence of degeneration of the spinal cord, but whose nervous symptoms were not observed to progress after splenectomy; Group 3, patients whose nervous symptoms progressed somewhat after splenectomy, and Group 4, patients whose nervous symptoms improved at least subjectively after splenectomy.

Group 1: None of the thirteen patients without signs of degeneration of the spinal cord before operation developed signs afterward. In this group are included three patients who survived operation more than three years.

Group 2: Fourteen patients with degeneration of the spinal cord or with subjective symptoms observed no progress in the nervous symptoms after operation; they represent 37.8 per cent. of the patients with degeneration of the cord before operation. In this group are included several patients who survived operation as long as four years and who complained of only slight symptoms.

Group 3: Twelve patients showed an advance in nervous symptoms after splenectomy, four a slight advance, seven a moderate advance, and one a rapid and marked advance; this patient had shown signs of fairly marked degeneration of the cord before splenectomy. This group represents 32.4 per cent. of the thirty-seven patients with degeneration of the cord before operation.

Group 4: Eleven patients with changes in the cord stated that their nervous symptoms, such as numbness and tingling of the extremities, were definitely improved after operation. These patients represent 29.7 per cent. of the patients with degeneration of the cord before operation. Some survived operation more than three years, some more than four. None presented marked neurologic signs before operation, and no objective improvement of these signs was observed in patients in whom a careful neurologic examination had been made before operation.

It is quite likely that the patient's improvement is subjective and the result of the amelioration of his general condition. On the other hand, there is some indication that the progress of the degeneration of the cord was less rapid following operation than would have been expected. The data at hand indicate that degeneration of the cord had not become marked in patients in whom the degeneration was slight previous to splenectomy. It is possible that the progress of the degeneration is arrested in some of the patients. Mental symptoms have not developed following operation.

A STUDY OF THE BILE PIGMENTS

If the bile pigments may be considered an index of hemolytic activity, the results obtained are very definite. The bile pigments in the duodenal contents, as discussed in a former paper,[2] were estimated by a modified Schneider technic, in Wilbur and Addis units. The objection has been raised that such a procedure cannot be exact; moreover, that the spectroscopic unit is quantitatively inaccurate. From the clinical standpoint, however, the test has been found to be of very definite value. The presence of more than a trace of urobilinogen is important, although its exact significance is not ascertained. Ordinarily, the readings for urobilinogen

2. Giffin, H. Z., Sanford, A. H., and Szlapka, T. L.: The Estimation of Urobilin and Urobilinogen in the Duodenal Contents, Am. J. M. Sc. 155: 562-579 (April) 1918.

in pernicious anemia range from 200 to 2,000 units. The readings for urobilin, which is normally present in from 400 to 1,000 units, are also high, so that the combined values of urobilinogen and urobilin frequently reach 3,000 units and occasionally 6,000 units. Within three weeks after splenectomy, urobilinogen disappeared from the duodenal contents in every case in which the test was made, with two exceptions, and urobilin dropped to normal. One case reacted in an unusual manner and will be discussed separately (Case 2).

The estimation of bile pigments by the fractional method of obtaining the bile by means of magnesium sulphate has recently shown variations which are difficult to explain.

The recurrences of anemia, slight icterus, and all the usual features of the ordinary relapses in cases in which operation has not been performed suggest a recurrence of the toxic damage and of increased hemolysis. Our cases, however, suggest that postoperative hemolysis is less active and the crises are less prolonged.

THE BLOOD COUNT

Splenectomy in some manner produces a profound reaction in the bone marrow. This clinical observation is corroborated by recent experimental work by Johnstone. The duration of this experimentally increased reaction in the bone marrow corresponds to the period of remission which is commonly observed after splenectomy for pernicious anemia. Large showers of normoblasts and megaloblasts are found in the blood smears. As many as 300, and once 900, nucleated erythrocytes have been observed while counting 300 leukocytes. In some cases these enormous numbers of nucleated cells have been found to be present for as long as four years after operation. The occurrence of postoperative leukocytosis was discussed in our former paper. Leukocytosis persisted much longer following splenectomy than would ordinarily be expected. Marked leukocytosis has been observed in several instances during the third year. A considerable fluctuation in the differential count occurred, tending frequently to a preponderance of polymorphonuclear cells. However, the degree of change in the blood picture following splenectomy was not always an index of the patient's postoperative progress. Several of the most successful cases showed few nucleated red cells and only slight leukocytosis.

THE SELECTION OF PATIENTS SUITABLE FOR SPLENECTOMY

In the selection of patients for operation in this series, preference was given persons between the ages of 35 and 45 with a previous history of one year or less, a favorable type of blood picture, and with little if any evidence of degeneration of the spinal cord. An absence of marked leukopenia with a polymorphonuclear rather than a lymphocytic predominance in the leukocyte count, marked hemolytic activity, estimated by the examination of the pigments in the duodenal contents in the presence of a competent bone marrow and a moderately enlarged spleen, were regarded as favorable to splenectomy. Patients in acute exacerbations and patients showing evidence of bone marrow exhaustion were excluded so far as possible. Two patients who died within three months after operation had the more acute type of anemia. In the light of our present knowledge it is probable that these were unfavorable cases for operation. However, a review of the preoperative and postoperative blood counts and a comparison of the favorable and the unfavorable results fail to bring out any definite conclusions with respect to the relationship of the foregoing factors to the actual duration of life. Not a few of the most encouraging preoperative blood counts occurred in patients whose postoperative course was short.

ABDOMINAL FINDINGS AT THE TIME OF OPERATION

The spleens of three patients were definitely less than normal in weight. Two of the patients died within eighteen months of operation; one is still alive and in good condition. The spleens of three other patients were very large, weighing 1,120 gm., 1,640 gm. and 2,330 gm. The clinical characteristics were also somewhat atypical in these patients; they were evidently anemias of the hemolytic type, but the color index was not constantly as high as usual. These three patients are dead. The weight of the spleens of the remaining patients varied from normal to 770 gm. The average weight, excluding the three very large spleens, was 358.7 gm.

Except for the splenic enlargement, nothing of special significance was observed in the abdomen with any degree of regularity. In a few cases the liver was moderately enlarged. The gallbladder was slightly thickened or adherent in only nine cases, and gallstones were present in four. One of the surviving patients in this series had a cholecystostomy for stones three and one-half years after splenectomy, with a normal postoperative convalescence. In our experience, however, obvious signs of gallbladder disease are not common in pernicious enemia.

In cases in which the appendix was examined, the surgeon did not note signs of active or extensive inflammatory reaction. A small duodenal ulcer was found in one case.

FOCAL INFECTIONS

An effort was made, whenever advisable, to remove all foci of infection. Pyorrhea, abscessed teeth, septic tonsils and sinus disease were given especial attention. The importance of cleaning up these possible sources of trouble, especially the teeth, was emphasized to the patient, in some instances with good cooperation. Not uncommonly, however, the patient neglected to follow the advice given. We have been surprised to note that three of the surviving patients in this series still retain obviously septic teeth and gums, apparently without injury to their general condition. While we still advise the removal of septic foci, believing that they may well have a physiologic and possibly an etiologic relation to pernicious anemia, we have been gradually forced to some doubt as to their grave importance in the stage of pernicious anemia in which our patients present themselves for examination. Greater benefit would doubtless have been obtained from their earlier removal, as a prophylactic measure before the actual development of the disease.

HISTORIES OF SURVIVING PATIENTS

Case 1 (A 150807).—*Mr. W. E. B., aged 41, had had pallor, numbness of the hands and legs, and weakness for nine months before examination, Jan. 26, 1916. The erythrocytes numbered 890,000. Splenectomy was performed, Feb. 2, 1916; the spleen weighed 586 gm. No severe relapses have occurred since operation. The patient works regularly. He last reported, Sept. 24, 1920, four years and seven months following operation. The total duration of his history is more than five and one-half years.*

The patient presented himself for examination, Jan. 26, 1916; his family history and previous medical history were unimportant with the exception of an attack suggestive of renal colic three years before. He stated that his complexion had been somewhat sallow for three years, but that there had been no marked pallor until nine months preceding the examination. Since then he had had slight numbness of the hands, and his legs had become weak so that it was difficult to control them. Enlargement of the spleen had not been noted previously, and there had been no history of stomatitis or diarrhea.

The patient was in fairly good nutrition, weighing 150 pounds, although he was markedly anemic. The spleen was easily palpable, approximately two finger breadths from the costal region. The urinalysis and the examination of the ureter, kidneys and bladder were negative. The blood count at the time of the first examination was: hemoglobin, 25 per cent.; erythrocytes, 890,000; a color index of 1.2+; leukocytes, 6,200, of which 62.3 per cent. were polymorphonuclear neutrophils, 26.7 per cent. small lymphocytes, 3 per cent. large lymphocytes, 7.7 per cent. eosinophils and 0.3 per cent. basophils; an occasional normoblast; marked anisocytosis; poikilocytosis, and polychromatophilia of slight degree. The blood picture both at this time and later was typical of pernicious anemia. A transfusion was given, Feb. 2, 1916. February 9, the hemoglobin was 30 per cent., and the erythrocyte count, 1,390,000.

Splenectomy was performed, February 12. The operation was not especially difficult; the spleen was definitely enlarged, weighing 530 gm. Postoperative convalescence was uneventful. An examination of the duodenal contents was not made preceding operation. March 10, however, about four weeks after splenectomy, an examination of the duodenal contents revealed the absence of urobilinogen and the presence of 700 units of urobilin. As has been noted, the absence of urobilinogen after splenectomy and the reduction of urobilin to normal is common.

March 20, the erythrocytes had risen to 1,990,000 and the leukocytes to 9,400, of which 68 per cent. were polymorphonuclears; six normoblasts were found in the count of 300 cells. April 19, 1916, the hemoglobin was 75 per cent. In April, 1917, a report by the patient's physician stated that he was in good condition and working regularly. In May, 1919, his weight was reported to be normal, his color and strength good. There had been no relapses. In April, 1920, the erythrocyte count was reported to be 3,500,000. Feb. 24, 1920, the hemoglobin was reported to be 80 per cent., and the erythrocytes, 3,000,000. The patient stated that his teeth had been in rather poor condition for the last six months, but they had not yet been attended to. Sept. 24, 1920, he reported that he was working regularly, although his occupation does not necessitate heavy labor.

CASE 2 (A 151088).—*Miss M. R. S., aged 29, had had weakness, pallor and stomatitis for ten months prior to examination, Jan. 31, 1916. The erythrocytes numbered 1,530,000. Splenectomy was performed, Feb. 14, 1916; the spleen weighed 530 gm. A cholecystostomy, with removal of gallstones, was performed elsewhere in August, 1919. The patient has had no relapses since splenectomy. She was married in June, 1919, and is able to do her housework. The total duration of her history is five years and nine months.*

The patient came under observation, Jan. 31, 1916. Her family history was negative with the exception that her mother had died with jaundice and an enlarged liver, but there was no indication that it was hemolytic jaundice. The patient had had smallpox and several attacks of tonsillitis. She stated that seven years before examination she had had stomatitis, but unaccompanied by any superficial eruption on the body. The history dated from one year preceding examination; the condition that she described might have been due to a more or less generalized myositis followed by the formation of small furuncles on the scalp and legs. Ten months previous to examination, pallor, slight icterus, shortness of breath, a definite weakness, sore mouth, and numbness and tingling of the

CONDITION OF PATIENTS IN THREE MONTH PERIODS AFTER SPLENECTOMY FOR PERNICIOUS ANEMIA*

Case	Date of Operation	Operative Death	3 Mos.	6 Mos.	9 Mos.	1 Yr.	15 Mos.	18 Mos.	21 Mos.	2 Yrs.	27 Mos.	30 Mos.	33 Mos.	3 Yrs.	39 Mos.	42 Mos.	45 Mos.	4 Yrs.	51 Mos.	54 Mos.	57 Mos.
7040 F. P. F.	2/10/10	..	—	+	—	..	+	—	..	?	?	—	—	D	..	..	..	..	..	..	..
112160 D. M.	8/11/14	..	+	+	—D	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..	..
98744 M. S.	12/ 2/14	..	—D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
122468 J. B. M.	1/23/15	.	—D	.	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
124257 M. S.	2/10/15	..	+	+	—T	+	—T	+	..	—	TT	±	±	±	±	±	D	..	..	..	..
127677 C. H.	4/17/15	D	..	..	..	..	..	..	..	..	..	..	..	..	..	D	..	..	..	..	..
129678 O. D. B.	6/ 4/15	..	+	+	+	+	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..
128307 J. H. D.	6/ 5/15	..	+	+	+	R	—	—	+T	+	—	D	..	..	..	..	..	..	..	..	..
131676 E. S.	6/24/15	..	+	+	—R	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
131001 R. C.	7/ 3/15	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
130882 M. J. F.	8/ 2/15	..	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
134484 W. G.	8/ 3/15	..	+	—	+	—	..	—	R	—	—	+	—	+	—	—	—	D	..	..	..
129695 T. L.	9/ 8/15	..	+	—	+	+	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
140045 G. L.	9/20/15	..	+	+	+	+	+	..	FT	+	+	D	..	..	..	..	..	..	..	..	..
142349 E. O.	10/ 1/15	..	+	+	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..
141771 H. P.	10/12/15	..	+	+	+	+	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..
142487 H. W. L.	10/15/15	..	—	—	+	+	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
140970 W. A. S.	10/19/15	..	+	+	—	—	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..
132078 C. A.	10/25/15	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
144232 J. N.	10/28/15	..	—	—	—	—	+	+	+	D	..	..	..	..	..	..	..	..	..	..	..
147406 E. F.	12/31/15	..	+	+	D	..	..	+	..	..	..	..	..	..	..	..	..	..	..	..	..
150807 W. F. B.	2/ 2/16	..	+	+	..	+	+	+	..	..	..	..	..	+	+	+	+	+	+	+	+
151088 M. R. S.	2/14/16	..	+	R	T*	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
150239 E. S.	2/23/16	..	+	+	+	+	T	+	+	+	—	T+	+	+	—	—T	D	..	..	..	..
151865 F. W. N.	2/24/16	..	+	—	—T	±	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
152822 W. H.	3/10/16	..	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	..
130512 C. G. T.	3/17/16	..	±D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
154498 D. D. H.	3/25/16	..	+	+	..	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
152265 L. C. H.	3/29/16	..	+	+	+	+	+	..	+	+	+	+	+	+	—	T+	—D	..	..	..	..
151646 B. N.	3/31/16	..	+	+	+	+	+	+	..	—	D	..	..	..	..	..	..	..	..	..	..
146801 W. H. C.	4/18/16	..	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
151748 J. E. I.	4/20/16	..	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
155439 W. P.	5/ 1/16	..	±	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
151021 H. H. M.	5/ 4/16	..	T*	+	+	—	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..
154259 W. V.	4/ 8/16	..	+	—T	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
158217 C. F. L.	5/25/16	..	+	R	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
157803 C. U. H.	6/ 2/16	..	+	+	T+	+	+	..	..	..	—	D	..	..	..	..	..	..	..	..	..
157290 C. A.	6/ 5/16	..	+	+	+	+	—	+	—	—D	..	..	..	..	..	..	..	..	..	..	..
161677 L. G. W.	6/15/16	..	+	+	+	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..
159048 A. W.	6/21/16	..	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
156285 W. J. M.	6/22/16	..	+	—	—	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
162242 D. F. W.	6/24/16	..	—	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
160970 N. E. R.	6/27/16	..	+	+	+	+	+	..	+	+	+	+	+	+	+	..	..	..	..	..	..
158136 J. H. F.	6/29/16	..	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
114066 S. N.	7/13/16	..	+	+	+	+	+	..	..	..	—	D	..	..	D	..	..	..	..	..	..
160337 J. F. M.	8/11/16	..	+	+	+	—T	+	+	+	+	±	+	+	+	+	..	..	..	..	..	..
166182 F. F. S.	8/29/16	..	+	+	+	+	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..
170115 P. H. W.	10/ 3/16	..	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..
152922 T. T.	11/ 3/16	..	—	—T*	D	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
184784 C. B.	3/ 2/17	..	+	+	+	+	—	D	..	..	..	..	..	..	..	..	..	..	..	..	..

* In the table, + indicates gain; —, loss; R, relapse; T, transfusion; *, radium over liver; D, death; TT, repeated transfusions until death from influenzal pneumonia; T², two transfusions.

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extremities were noted. Enlargement of the spleen had not been recognized previously. Stomatitis had evidently been present at intervals for several years, but was much less troublesome than formerly.

On physical examination the patient was found to be well nourished; she weighed 162 pounds. The spleen was easily palpable two finger breadths from the costal margin. The patient was definitely icteric and pale. Examination of the blood revealed a hemoglobin of 35 per cent.; erythrocytes, 1,580,000; a color index of 1.1; leukocytes, 4,600, of which 45.3 per cent. were polymorphonuclear neutrophils, 55 per cent. small lymphocytes, 6.7 per cent. large lymphocytes, and 0.3 per cent. basophils; 18 normoblasts and 2 megaloblasts were observed in a count of 300 cells. Anisocytosis and poikilocytosis were marked. The resistance of the erythrocytes to hypisotonic salt solution was not decreased. The Wassermann test was negative. The examination of the stools was negative for parasites. Examination of the eye grounds revealed an interesting condition: There was a fresh retinal hemorrhage in the right eye, while one area in the left eye was suggestive of an old retinal hemorrhage, and the optic nerves were pale; the veins were tortuous, engorged, and similar in appearance to those not uncommonly found in leukemia.

Transfusion was performed, Feb. 8, 1916, and splenectomy was performed, February 14. The spleen was definitely enlarged; it weighed 530 gm. The hospital convalescence was uneventful. Postoperative improvement occurred very slowly. March 3, about three weeks after the operation, the erythrocytes numbered 1,360,000. A most interesting finding at this time was the presence of 636 normoblasts and of 19 megaloblasts in a count of 300 cells. Aug. 11, 1916, the erythrocytes numbered 2,000,000, the leukocytes 11,800, of which 75 per cent. were polymorphonuclears; 330 normoblasts and 11 megaloblasts were seen.

Preoperative examination of the duodenal contents had not been made. A postoperative estimation, June 8, 1916, showed urobilinogen, 2,400 units, and urobilin, 600 units. Another estimation, Aug. 5, 1916, showed urobilinogen, 1,000, and urobilin, 600. The clinical characteristics of the case and the postoperative finding of very high values for urobilinogen seem to indicate the probable presence of extremely high values for urobilinogen before splenectomy. From August to October, 1916, the patient's general condition did not improve. Oct. 2, 1916, the erythrocytes numbered 2,030,000; 912 normoblasts and 11 megaloblasts were observed in a count of 300 cells. Transfusions were performed, Sept. 28 and Oct. 12, 1916, without definite improvement. The liver had become markedly enlarged, and a twenty-four hour exposure of radium over the liver was given, a 50 mg. tube being employed and successive areas being exposed for three-hour periods each. Surprising improvement followed this treatment, in the patient's strength and color, while the size of the liver decreased to almost normal limits. In April, 1917, the patient's erythrocytes were reported as 4,500,000, and her general condition as excellent. In November, 1917, her weight was 206 pounds and her strength fairly good. In June, 1919, her hemoglobin was reported as 80 per cent., her weight 182 pounds, and she was able to do her own housework. She had had several abdominal attacks, however, which were suggestive of gallstones.

Aug. 15, 1919, cholecystostomy with removal of gallstones was performed elsewhere. Following the operation the patient was confined to her bed with phlebitis of the left leg; otherwise her convalescence was uneventful.

In March, 1920, the patient reported that she was in very good condition, her weight was 178 pounds, and she was able to do her own work. She had been married in June, 1919; she had not become pregnant. Her last letter in November, 1920, stated that she was still in good condition, and reported incidentally that she was still subject to attacks of glossitis similar to those experienced before her operation. This is an interesting observation, common to many of our patients who have been operated on.

CASE 3 (A 152922).—*Mr. W. H., aged 53, had had pallor, weakness, numbness of fingers, and gastric symptoms for one year prior to examination, Feb. 23, 1916. The erythrocytes numbered 2,110,000. Splenectomy was performed, March 10, 1916; the spleen weighed 150 gm. The patient has been able to do light farm work most of the time since operation. The total duration of his history is more than five and one-half years.*

The patient was examined in the clinic, Feb. 23, 1916. His mother had died probably of Addison's disease. His three children were still-born at the sixth, seventh and ninth months. The patient had had several attacks of grip during the last ten years. Twelve years before, at the time of an attack of diarrhea, a physician had told him that he was anemic; four or five years before, numbness and tingling of the hands had been noticed. For one year before, pallor, weakness, gastric distress, nausea and vomiting had been definitely noticeable, and were more marked the last two months. The bowels were constipated. No note was made of sore mouth or tongue.

On examination, a lemon yellow pallor was noted. A tender area was present above the umbilicus and a little to the right of the median line. The spleen was easily palpable and the liver edge could be felt. A blood count, April 26, revealed a hemoglobin of 45 per cent.; erythrocytes, 2,110,000; a color index of 1.0+; leukocytes, 6,400, of which 50 per cent. were polymorphonuclear neutrophils and 4 per cent. eosinophils; moderate anisocytosis, and slight poikilocytosis. Normoblasts and megaloblasts were not observed. A blood Wassermann test was negative. Gastric analysis revealed achlorhydria. Roentgen-ray examinations of the stomach, chest and teeth were negative. Six hundred units of urobilinogen and 2,000 units of urobilin were present in the duodenal contents.

Splenectomy was performed, March 10, 1916 (W. J. Mayo). The spleen weighed only 150 gm. The hospital convalescence was uneventful. By April 4 the patient's slight jaundice had disappeared and he felt stronger, although there was a slight fall in the blood count. The hemoglobin was 35 per cent., the erythrocytes 1,840,000, and the leukocytes 13,200, of which 64 per cent. were polymorphonuclear neutrophils. Ten normoblasts were noted in a count of 300 cells, and marked anisocytosis and poikilocytosis were present. April 1, an examination of the duodenal contents disclosed an absence of urobilinogen, and 1,400 units of urobilin. April 26, a blood count was made elsewhere which showed the hemoglobin to be 63 per cent. and the erythrocytes 3,200,000. During the winter the patient had a series of colds which caused him to lose color, weight and strength, until March, 1917, when his erythrocytes were 3,610,000 and slight jaundice was present. There was neither improvement nor exacerbation of the nervous symptoms. He had been able to do light work. During the summer his weight remained quite constant at about 160 pounds, and he was able to do farm work. In May, 1919, he weighed 163, and his endurance was good. The erythrocytes were 4,510,000. March 10, 1920, he stated that his strength during the preceding year had been better than ever and he was able to do hard farm work. Sept. 29, 1920, four and one-half years after splenectomy, his blood and general condition were still at the same good level.

CASE 4 (A 160970).—*Mr. N. E. R., aged 35, complained of weakness, pallor, numbness and gastric symptoms for one year before examination, May 29, 1916. Splenectomy was performed, June 27, 1916; the spleen weighed 300 gm. The patient has had no severe recurrences since operation. He works regularly. The total duration of his history is a little more than five years.*

The patient was admitted to the clinic for examination, May 29, 1916. His previous medical history seemed to be negative except for scarlet fever at the age of 5. The present illness had begun one year before examination and was manifested by weakness, pallor, nausea and vomiting, constipation, considerable epigastric pain, and slight coldness and numbness of the legs. Marked improvement had taken place under medical care about six months before, following which the patient was able to work until the last six weeks, when the previous symptoms had recurred. The patient had recently lost 16 pounds in weight.

Physical examination revealed the patient to be thin, and with skin of lemon yellow color. He had several infected teeth. The spleen was palpable about one finger's breadth below the left costal margin. May 29, the blood contained

hemoglobin 37 per cent.; the erythrocytes were 2,280,000, and the leukocytes 9,800, of which 63 per cent. were polymorphonuclear neutrophils and 0.3 per cent. neutrophilic myelocytes. Moderate anisocytosis and moderate polychromatophilia were present. A test meal gave a total acidity of 10, and no free hydrochloric acid. Roentgen-ray examinations of the stomach were indeterminate, and of the chest negative. The blood Wassermann test was negative and there was no increase in the fragility of the red cells. The duodenal contents contained bilirubin + + +, urobilin 800 units, and urobilinogen 200 units. A neurologic examination was not made.

Splenectomy was performed, June 27, 1916 (Balfour). The spleen was about twice its normal size and was abnormally adherent; it weighed 300 gm. A small ulcer of the duodenum one-half inch below the pylorus was supected, and the gallbladder was buried in adhesions. Following the operation the patient felt stronger, and his appetite improved, but his legs continued to be somewhat weak and numb. July 25, four weeks after operation, the duodenal contents were examined; urobilinogen was absent; there was a trace of urobilin. The postoperative progress of this patient has been satisfactory. He has had no relapses and has been able to do hard work quite regularly. He was last heard from March 12, 1920, at which time the erythrocytes were 4,500,000 and the hemoglobin 90 per cent.

While the clinical picture at the time of examination was indicative of pernicious anemia, the postoperative course was so satisfactory that the diagnosis remains somewhat questionable in the light of the findings at operation and the absence of showers of nucleated erythrocytes after splenecomy.

CASE 5 (A 166337).—*Mr. J. F. M., aged 34, had had pallor, weakness and gastric symptoms one year before examination, July 17, 1916. The erythrocytes numbered 1,350,000. Splenectomy was performed, Aug. 11, 1916; the spleen weighed 430 gm.. The patient is working regularly as a bookkeeper in a bank almost four years following operation. The total duration of his history is five years.*

The patient was admitted for examination, July 17, 1916. His family history was unimportant. His previous medical history was negative save for "grip" and sciatica. His illness seems to have dated from one year previous to examination and was associated with weakness, loss of appetite, gastric disturbances, slight diarrhea and pallor. Slight numbness of the fingers and a mild glossitis which was aggravated by tobacco had been noted. The patient had had infected teeth for three or four years. From December, 1915, to March, 1916, the patient improved markedly under medical management, and then began to fail.

On examination, he was found to be weak and with a rapid pulse. He had a greenish icteroid pallor. The spleen could be felt about two finger breadths below the costal margin. An examination of the fundi revealed retinal hemorrhages. July, 1916, the blood contained hemoglobin 26 per cent; the erythrocytes were 1,350,000; the color index 0.9 +; leukocytes, 5,000, of which 73 per cent. were polymorphonuclear neutrophils, and 3.7 per cent. neutrophilic myelocytes. In the blood smear, 9 normoblasts and 2 megaloblasts for each 300 cells were found, with marked anisocytosis, moderate poikilocytosis, and slight granular degeneration of the erythrocytes. A blood Wassermann test was negative. The duodenal values in a somewhat unsatisfactory test were: bilirubin, a trace; urobilinogen, 200 units; urobilin, 400 units; total, 600 units. A roentgen-ray examination of the chest gave evidence of small healed areas of tuberculosis in the upper left lobe of the lung.

After two transfusions, July 24 and Aug. 2, 1916, splenectomy was performed, August 10. The spleen was enlarged, very adherent, and weighed 430 gm. The hospital convalescence was uneventful. Two blood counts made shortly after operation showed 40 normoblasts at one time and 460 normoblasts and 15 megaloblasts to each 300 cells at another. September 19, the hemoglobin was 60 per cent.; the erythrocytes, 3,870,000; the leukocytes, 13,500, of which 27 per cent. were polymorphonuclear neutrophils and 58 per cent. small lymphocytes. The blood smears showed 4 normoblasts for each 300 cells, with moderate changes in the size and shape of the erythrocytes. The patient's improvement after operation was rather delayed, with no marked improvement until after three weeks. Nov. 14, 1916, the hemoglobin was 74 per cent. and the erythrocytes 3,440,000. Nucleated erythrocytes were not observed. The patient's general condition continued to improve and in April, 1917, was good. Aug. 8, 1917, a telegram stated that the patient had suffered an acute relapse associated with high fever, nausea and anemia. This may have been due to some type of acute infection. Two transfusions given elsewhere were followed by improvement. Following this the patient was apparently in fairly good health until January, 1919, when a less severe relapse of short duration occurred. The last communication was dated Feb. 21, 1920. For six months the patient had been working eight and ten hours a day as a bookkeeper in a bank. He was heard of indirectly in November, 1920.

SUMMARY

1. This review concerns fifty patients with pernicious anemia for whom splenectomy was performed. All were operated on more than three years ago.

2. The operative mortality was 6 per cent.

3. Ten patients (21.3 per cent.) of those who recovered from operation survived splenectomy three years or longer.

4. Five patients (10.6 per cent.) of those who recovered from operation have survived splenectomy more than four and one-half years, and are still living. The total length of history of these five patients averages almost six years.

5. It may be stated with reasonable accuracy that, in addition to the immediate remission which occurred constantly following splenectomy, splenectomy prolonged life in at least 20 per cent. of our cases.

6. We cannot satisfy ourselves that any particular preoperative characteristics of the disease are indicative of favorable results following splenectomy. However, in the type of case in which there is evidence of active hemolysis, the patient shows a more marked immediate improvement.

7. Splenectomy may be recommended in pernicious anemia when, in view of all the circumstances, personal as well as medical, the possibility of the prolongation of life appeals to the family and to the patient. Occasionally the operation may be performed in order to bring about an immediate remission.

THE RELATIONSHIP OF HIGH BLOOD SUGAR TO FURUNCULOSIS

REPORT OF A CASE *

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This case is considered sufficiently important to report because (1) the original complaint was of "attacks of multiple furuncles," and in investigating this condition it was discovered that the patient had a high blood sugar, and (2) the clue given by the high blood sugar was investigated further, and it is believed that the data indicate that this is a case in either the prediabetic stage, or else an unusually early stage of diabetes.

REPORT OF CASE

History.—S. G., schoolboy, aged 15, Jew, admitted to the hospital, Feb. 18, 1920, whose mother, father and one sister were living and well, who had one sister who died in infancy, of unknown cause, and in whose family there was no history of diabetes, had had all the common diseases of infancy and childhood. The history otherwise was negative. He was at a boy's summer camp eight months before, where his mother

* From the Laboratories of Columbia Hospital.

thought he did not secure proper food. She had noted that he ate a large amount of sugar and bread. For the last five months the patient had had one crop of furuncles following another on the back of the neck, hands, and soles of the feet. An autogenous vaccine had been administered, but without benefit.

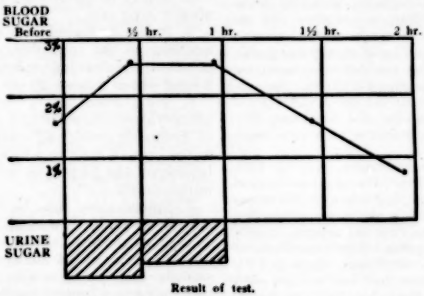
Physical Examination.—The general physical examination was entirely negative. On the back of the neck were seven large furuncles. Over the neck and chin were the remains of a large number of recently healed furuncles.

Treatment.—The furuncles were opened and dressed in the usual manner. They did not improve until a reduced carbohydrate diet, described later, was instituted.

The urine, during the patient's stay in the hospital, was examined repeatedly. Sometimes it showed albumin, sometimes not; casts were never present. Once it gave a pea-green reaction, and once reduction with Fehling's solution. The blood Wassermann test was negative.

February 28, the blood sugar was 0.148 per cent.[1] This blood sugar finding was interpreted to mean either a blood sugar at the upper limit of normal or else an abnormal condition. During this time the patient had no restriction of his diet and was eating large amounts of carbohydrate. A carbohydrate utilization test was next given the patient. February 29, 100 gm. of glucose were given in 300 c.c. of water at 8 a. m. The accompanying curve gives the result of this test.

It is to be noted that the blood sugar finding before the test was 0.155 per cent., even higher than the previous one. The curve shows that the peak was not reached until one hour after the glucose was taken. In normal individuals, according to Strouse,[2] the peak is reached at one half hour; the curve then descends rather rapidly toward the base line, and the urine does not contain sugar. When the peak is reached at a later period than half an hour, and when the curve tends to stay up, it signifies an abnormal carbohydrate metabolism. The appearance of sugar in the urine is also abnormal.



Result of test.

It was then considered that the high blood sugar finding did not indicate simply a high normal, but was definitely abnormal. The patient then left the hospital and for three weeks was put on a diet with carbohydrates much reduced. Following this the diet was further restricted to 5 and 10 per cent. vegetables, fruits, nuts, liver, fish and bacon. He ate a large amount of bacon, as much as five or six slices at each meal. Two days later acetone appeared in his urine, and the next day diacetic acid as well. Both of these substances appeared in increasing amount in the urine during the few days he was on this diet. Albumin also was present, but no reduction of Fehling's solution was obtained. The amount of sugar present in the urine, however, was determined by the Benedict method for determining sugar in normal urine. The results of the urinalysis are given in Table 1. At the end of the six day period of reduced carbohydrate in the diet the blood sugar was found unchanged, namely, 0.146 per cent. During this time, however, the furuncles disappeared and no new ones developed. The patient was then readmitted to the hospital, because of the acidosis, and put on a liberal diet, except that the fat was kept down to 25 gm. His diet for four days consisted of protein, 100 gm.; carbohydrate, 200 gm., and fat, 25 gm., at the end of which time the blood sugar was 0.140 per cent., and the acetone had completely disappeared. After this increase in carbohydrates, furuncles again developed. On the fifth day the fat was increased to 50 gm., and the urine findings remained the same. The sugar determination with the Benedict method for sugar in normal urine showed normal figures. On the sixth day the diet was increased to 75 gm. of fat and 250 gm. of carbohydrate, in addition to which the boy ate, without permission, two figs. The diet was kept at this level for three days, on the second day of which the urine gave a reduction with Fehling's solution and showed 2.28 gm. of sugar, which was 0.38 per cent. The blood sugar the next day was 0.198 per cent. This was the only day when the urine sugar was above normal, even though the blood sugar was always from 0.140 to 0.155 per cent.

Following this, the diet was changed to 125 gm. of protein, 90 gm. of fat and 200 gm. of carbohydrate. (The fat and protein were increased in order to keep up the caloric intake, and the carbohydrate was gradually reduced.) The first day of this diet the urine gave no reduction with Fehling's solution, but the next day it gave a pea-green reaction, which might be without significance since Benedict's method showed a normal amount of urine sugar. Five days after the patient was on a diet of 125 gm. of protein, 90 gm. of fat and 200 gm. of carbohydrate, the blood sugar was found to be 0.185 per cent. The carbohydrate was then reduced to 150 gm., the other elements remaining the same, and after six days of this diet the blood sugar was found to be 0.15 per cent. The blood sugar varied consistently with the carbohydrate intake. It seemed impossible to reduce the blood sugar below about 0.15 per cent. without reducing the caloric intake below the amount essential for a growing boy. It is peculiar that when the patient first entered the hospital with a crop of furuncles the blood sugar was from 0.145 to 0.155 per cent. Carbohydrate intake was reduced, and the furuncles cleared up. The patient did not adhere to this restricted diet, and furuncles again occurred. Carbohydrates were then greatly reduced, and the furuncles again disappeared. On a liberal diet, including 250 gm. of carbohydrate, the blood sugar reached 0.198 per cent. On a fairly liberal diet (Table 1), but one much poorer in carbohydrates than the patient's appetite dictated, the furuncles did not recur, although the blood sugar did not fall below the original level—between 0.145 and 0.150 per cent.

The results of the phenolsulphonephthalein test are given in Table 2.

The results of the Mosenthal kidney function test are given in Table 3. This test probably does not give a true indication of the kidney function, as it had to be performed while the patient was at home and two possible factors of error entered into the test: It was an extremely hot day in summer so that the patient perspired very freely, and the patient could not be absolutely relied on to bring all of the specimens of urine voided by him. Bearing this in mind, it would appear that the Mosenthal test shows no apparent deviation from the normal: that there is sufficient variation of the specific gravity of the different specimens to correspond to normal, and that the apparent retention of chlorids and fluid should be explained on the basis that incomplete specimens were brought to the laboratory by the patient. The phenolsulphonephthalein test, however, would indicate a kidney function somewhat below normal.

1. All blood sugar examinations were made with the blood drawn early in the morning before breakfast, the patient having had nothing by mouth since 8 o'clock the night before. Benedict's modification of the Lewis-Benedict blood sugar method was used: Benedict, S. R.: A Modification of the Lewis-Benedict Method for The Determination of Sugar in The Blood, J. Biol. Chem. **34**: 203 (April) 1918. Benedict, S. R., and Osterberg, Emil: A Method for the Determination of Sugar in Normal Urine, ibid. **34**: 195 (April) 1918.

2. Strouse, Solomon: The Accurate Clinical Study of Blood Sugar, Bull. Johns Hopkins Hosp. **26**: 211, 1915; Observations on Alimentary Hyperglycemia, Arch. Int. Med. **26**: 759 (Dec.) 1920.

COMMENT

It would appear that this patient has certainly an abnormal carbohydrate metabolism. In all probability the attacks of furunculosis were due to this abnormal-

ity in the carbohydrate metabolism, the clinical expression of which was the high blood sugar found originally. Although the blood sugar has never been reduced to within the usual normal limits, nevertheless, when it was kept down, and when the carbohydrate intake was also kept down, the patient was temporarily free of furuncles. Strouse was the first one to call attention to the presence of a high blood sugar in a simple case of multiple furunculosis. For thirty days the furuncles showed no tendency to clear up, in spite of active surgical treatment. When, however, the patient was put on a carbohydrate-free diet, the furuncles promptly began to heal and at the end of a few days were completely healed. This case was evidently not one of diabetes, but simply a condition of furunculosis superinduced by an abnormally high blood sugar. Since the report of this case, the correlation of furunculosis and high blood sugar has become more generally recognized, and reports of a number of such cases are now scattered in the literature.

A further indication of abnormal carbohydrate metabolism is the abnormal curve of the carbohydrate

SUMMARY

It has been impossible to reach a definite conclusion as to just what is the underlying condition in this case. One of the main points of interest is the apparent relationship between the high blood sugar and furunculosis in a case which is not one of outspoken diabetes. The most conservative opinion would be that this case shows an abnormal carbohydrate metabolism, which is so nearly the same as that in diabetes that it may be called a prediabetic stage of this disease. It may be, however, that the case is an extremely early one of diabetes.

Attention has recently been directed [3] to the possible injurious effect of high carbohydrate diets on patients in the prediabetic stage of diabetes.

It was noted by the boy's parents that before the attacks of furunculosis appeared he was in the habit of eating tremendous quantities of carbohydrates. This indulgence in large amounts of carbohydrates might signify that the diabetic condition or tendency of the boy caused this appetite for carbohydrates. It is possible that he simply indulged excessively in carbohydrates and that this precipitated the furunculosis and the abnormality in carbohydrate metabolism.

The patient will be carefully observed, and if further important developments occur to clear up the case they will be reported. The possibility must also be enter-

TABLE 3.—MOSENTHAL TEST, JUNE 27 AND 28, 1920 *

No.	Time	Specific Gravity	Total Volume, C.c.	Total N Gm.	Total N %	Sodium Chlorid Gm.	Sodium Chlorid %
1	Sunday 11 a.m.	1.030	31.0	0.53	1.72	0.41	1.31
2	12 noon	1.022	106.0	1.07	1.01	1.51	1.42
3	2 p.m.	1.033	35.0	0.61	1.74	0.50	1.42
4	4 p.m.	1.030	8.5	0.07	0.78	0.02	0.23
5	6 p.m.	1.032	52.5	0.86	1.60	0.62	1.17
6	8 p.m.	1.024	12.5	0.16	1.30	0.08	0.64
7	Monday 8 a.m.	1.032	152.0	3.26	2.14	0.53	0.35
Totals			397.5	6.56		3.68	
Per cent. of intake			22.59	50.60		33.3	
Balance			+1,362.5	+6.42		+7.34	

Diet not eaten: 5 gm. of lettuce; ¾ teaspoon of olive oil, at dinner.

* Intake: fluid, 1,760 c.c.; protein, 81.25 gm.; salt, 11 gm.

TABLE 1.—DIET, URINALYSIS AND BLOOD SUGAR

Date	Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.	Volume of Urine, C.c.	Specific Gravity	Reaction	Albumin	Fehling's Solution	Sugar Per Cent.	Sugar Gm.	Acetic Acid	Diacetic Acid	Blood Sugar, per Cent.
2/18/20	...	..	...	.....	1.054	Acid	Negative	Negative	.....	.....	.....	.....	.....
2/24/20	...	..	...	800	1.029	Acid	Negative	Negative	0.059	0.521	Negative	Negative	.....
2/25/20	...	..	...	320	1.023	Acid	Negative	Negative	.....	.....	Negative	Negative	.....
2/26/20	...	..	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.148
2/27/20	...	..	...	530	1.030	Acid	Trace	Pea green	.....	.....	.....	.....	.....
3/ 1/20	...	..	...	370	1.024	.....	Ft. tr.	Negative	.....	.....	.....	.....	0.155
3/ 2/20	...	..	...	240	1.027	Acid	Trace	.....	.....	.....	.....	.....	.....
4/24/20	...	..	...	1,115	1.031	Acid	Negative	Negative	0.047	0.523	+	Negative	.....
4/25/20	...	..	...	910	1.029	Acid	.....	Negative	0.042	0.380	+	Negative	.....
4/26/20	...	..	...	800	1.029	Acid	Trace	Negative	0.051	0.454	+	Negative	0.148
4/27/20	...	..	...	1,025	1.029	Acid	+	Negative	0.044	0.454	++	Trace	.....
4/28/20	...	..	...	750	1.022	Acid	+	Negative	0.053	0.394	+++	+	.....
4/29/20	...	..	...	800	1.025	Acid	Negative	Negative	0.063	0.500	+++	++	0.146
4/30/20	100	25	300	1,038	1.026	Acid	Trace	Negative	0.089	0.711	Trace	Negative	.....
5/ 1/20	100	25	300	650	1.024	Acid	Negative	Negative	0.057	0.368	Negative	Negative	.....
5/ 2/20	100	50	300	355+	1.022	Acid	Ft. tr.	Negative	.....	.....	Ex. ft. tr.	Negative	0.140
5/ 3/20	100	50	300	500	1.027	Acid	Negative	Negative	0.134	0.670	Negative	Negative	(no casts)
5/ 4/20	100	50	300	685	1.022	Acid	Negative	Negative	0.084	0.572	Negative	Negative	.....
5/ 5/20	100	75	250	600	1.025	Neutral	Negative	Negative	.....	0.550	Negative	Negative	.....
5/ 6/20	100	75	250	600	1.028	Acid	Negative	Positive	0.38	2.28	Negative	Negative	.....
5/ 7/20	100	75	250	700	1.021	Acid	Ft. tr.	Positive	.....	.....	Negative	Negative	0.198
5/ 8/20	125	90	300	640	1.032	Acid	Ft. tr.	Negative	.....	0.510	Negative	Negative	.....
5/ 9/20	125	90	300	310	1.030	Acid	Ex. ft. tr.	Pea green	.....	0.250	Negative	Negative	.....
5/10/20	125	90	300	580	1.033	Acid	Ex. ft. tr.	Negative	.....	0.404	Negative	Negative	.....
5/11/20	125	90	300	600	1.031	Acid	Ex. ft. tr.	Negative	.....	0.469	Negative	Negative	.....
5/12/20	125	90	300	830	1.026	Neutral	Negative	Negative	.....	.....	Negative	Negative	0.185
5/13/20	125	90	150	440	1.034	Acid	Negative	Negative	.....	.....	Negative	Negative	.....
5/14/20	125	90	150	620	1.028	Neutral	Negative	Negative	.....	.....	Negative	Negative	.....
5/15/20	125	90	150	480	1.027	Neutral	Negative	Negative	.....	.....	Negative	Negative	.....
5/16/20	125	90	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.15
6/16/20	125	90	150	600	1.030	Acid	Negative	Negative	0.079	0.473	Negative	Negative	.....
6/26/20	125	90	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.165

utilization test. Also, the appearance of sugar in the urine the day when the carbohydrate intake was 250 gm., and the blood sugar, 0.198 per cent., is certainly abnormal.

At present the boy is at home and is given the same diet which he last had at the hospital, namely: protein, 125 gm.; fat, 90 gm., and carbohydrate, 150 gm. This diet is carefully supervised by an expert dietitian.

TABLE 2.—RESULTS OF PHENOLSULPHONEPHTHALEIN TEST

Time	Amount, C.c.	Per Cent.
11 a.m.	395	35.0
12 m.	150	9.5
1 p.m.	60	4.5

It must be borne in mind that albumin has been present in the patient's urine frequently, and although no formed elements are present, there is probably a mild degree of nephropathy. This condition of the kidneys in all probability has had some influence in both the raising of the blood sugar, and also the sugar threshold as far as glycosuria is concerned.

3. Michael, J. C.: A Menace in the Low Protein Diet, Arch. Dermat. & Syph. 2: 455 (Oct.) 1920. An Unsuspected Occasional Menace in Low Protein Diets, editorial, J. A. M. A. 75: 1426 (Nov. 20) 1920.

tained that this might be a temporary abnormality of carbohydrate metabolism associated with adolescence, perhaps a temporary polyglandular disturbance, and that it will disappear later. This point also will be followed.

THE UREA CONCENTRATION TEST FOR KIDNEY FUNCTION

PRELIMINARY REPORT

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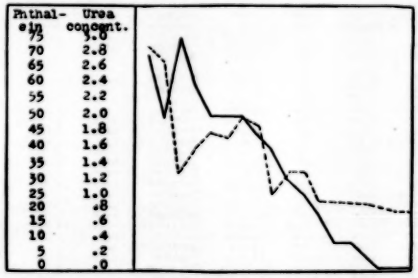
The question of kidney function is by no means a settled one. It is becoming more generally recognized that the presence of albumin in the urine, and even occasional casts, do not necessarily mean organic kidney disease. MacLean,[1] in a study of 50,000 healthy soldiers, found albumin in the morning urine in nearly 6 per cent., and casts of various kinds as well in nearly 2 per cent. On the other hand, the absence of albumin and casts in the urine does not absolutely exclude the possibility of a kidney lesion. Furthermore, as has been shown by MacNider[2] in his work on experimental nephritis, the amount of albumin in the urine is no index to the severity of the disease or the degree of functional disturbance.

So, too, other well known methods of estimating kidney function fail in their purposes at times. The widely used phenolsulphonephthalein test is open to certain objections. Christian,[3] speaking of the earlier stages of chronic nephritis, says: "In these earlier cases the phthalein excretion is so nearly normal as to be of no diagnostic aid." Hill,[4] working with mild chronic nephritis in children, found it possible for severe kidney damage to exist with phenolsulphonephthalein outputs of from 60 to 70 per cent. Fitz,[5] in his work on renal function, says: "The phthalein and nonprotein nitrogen concentration of the blood are not of any significant value in the diagnosis of early chronic nephritis before the characteristic physical signs and symptoms have developed. When either test is sufficiently abnormal to be positive, it is usually accompanied by a fairly definite train of physical signs. When both tests are negative in the presence of outspoken symptoms of chronic nephritis, it is not justifiable to assume that no kidney lesion exists." MacLean and Russel[6] believe that only in cases in which kidney tissue is reduced to one quarter do the nitrogen constituents increase in the blood, and MacNider[2] states that even with a phenolsulphonephthalein output as low as 48 per cent. there may be no marked retention of either blood urea or creatinin. Thus, it is seen that many observers agree that the determination of the nonprotein constituents of the blood is of little value in the diagnosis of early chronic nephritis.



Parallelism of urea concentration and phenolsulphonephthalein elimination: solid line, phenolsulphonephthalein; broken line, urea concentration.

UREA AS A TEST SUBSTANCE FOR KIDNEY FUNCTION

Addis[7] believes that urea possesses many advantages as a test substance for renal function: First, urea is a true end-product, incapable of chemical alteration within the body. Second, the urea concentration of blood and tissues may be markedly increased without disturbing any essential physical equilibrium of the body. Third, urea is actively excreted only by the kidneys. Fourth, the exact portion of the kidney that is directly involved in concentrating the urea from the blood is known, i. e., the cells of the proximal convoluted tubules. Fifth, administered urea throws a strain on the kidneys and so brings to light any latent deficiencies. In another communication by Addis and Watanabe,[8] the statement last made is used as an objection to the phenolsulphonephthalein test, concerning which they bring forth the argument that function may be entirely normal under ordinary circumstances, but show itself defective under strain. Thus, they hold that the lesion in the earlier stages of chronic disease is not diffuse but patchy, and that the uninvolved, or slightly involved sections of kidney may have no difficulty in excreting a minute amount of dye substance but will show functional incapacity when subjected to the strain of a larger dose of urea. Therefore, they conclude that a test in which urea is administered would seem to be better adapted for the diagnosis of such conditions.

THE UREA CONCENTRATION TEST

Addis,[7] in one of his many contributions to the urea excreting function of the kidney, brings out the fact that the special characteristic of decreased functional capacity is a low rate of excretion during the first few hours after urea administration. McCaskey,[9] in an attempt to use administered urea as a test of kidney function, determined the amount excreted in bihourly periods following the administration of 30 gm. He determined the range in health to be a total excretion during the first twelve hours of from 20 to 30 gm., and from 5 to 10 gm. as the highest excretion in any bihourly period. He concluded that a limited function for urea excretion existed if there was a total excretion much below 20 gm., and 10 or below represents serious

1. MacLean, H.: Albuminuria and War Nephritis Among British Troops in France, Med. Research Committee, Special Rep. Series 43, London, 1919.
2. MacNider, W. de B.: Study of Renal Function in Experimental Nephritis, Arch. Int. Med. **26**: 1 (July) 1920.
3. Christian, H. A.: Some Phases of the Nephritis Problem, Am. J. M. Sc. **151**: 625 (May) 1916.
4. Hill, L. W.: Mild Chronic Nephritis in Children, J. A. M. A. **75**: 596 (Aug. 28) 1920.
5. Fitz, Reginald: The Phenolsulphonephthalein Test and the Non-Protein Nitrogen of the Blood in Chronic Nephritis, Boston M. & S. J. **183**: 247 (Aug. 26) 1920.
6. MacLean, H., and Russel, A. E.: Some Observations on the Investigation and Treatment of Nephritis, Lancet **1**: 1305 (June 19) 1920.
7. Addis, Thomas: Ratio Between the Urea Content of Urine and Blood After Administration of Large Quantities of Urea, J. Urol. **1**: 263 (June) 1917.
8. Addis, Thomas, and Watanabe, C. K.: A Method for the Measurement of the Urea-Excreting Function of the Kidneys, J. Biol. Chem. **28**: 251 (Dec.) 1916.
9. McCaskey, G. W.: A New Method for Estimating the Functional Capacity of the Kidney by Forced Elimination of Preformed Urea, Med. Rec. **85**: 507 (March 21) 1914.

or even dangerous impairment of function. He found no parallelism between the phenolsulphonephthalein and urea outputs.

MacLean and DeWesselow [10] have formulated a kidney function test along much the same lines, their test depending on the decreased concentrating power of a diseased kidney. The test is thus made:

> The patient voids, and then takes by mouth 15 gm. of urea dissolved in 100 c.c. of water (flavored with tincture of orange). The patient passes urine at the end of one hour and at the end of two hours, both specimens being measured and saved for analysis. The administration of urea induces a diuresis in a few individuals, and should the hourly specimen measure more than 150 c.c., a third hour urine is collected and preserved for the determination. Urea is estimated by the ordinary hypobromite method, a modified apparatus standardized by the more accurate urease method being utilized. Their conclusions, drawn from a study of 1,200 cases of war nephritis, indicate that a urea concentration exceeding 2 per cent. means a fairly efficient kidney, and less than 2 per cent.

a diseased kidney—the lower the concentration, the more serious the kidney damage.

In a later study by MacLean and Russel,[*] only the second hour specimen was saved for the determination, the first being measured, however, to note any diuretic effects. They maintain that in cases showing an excretion of from 350 to 600 c.c. or more in the two hours, any tendency to a low concentration may be put down to excessive fluid—not to kidney disease.

In the work described herewith, the urea concentration for the two hour period preceding the test and the concentration of the second hour specimen was determined by both the urease and the hypobromite methods. The amount of urea excreted in the two hour period following the administration of urea was calculated, the urease method being employed. In addition the blood urea nitrogen was determined both before administration of urea and two hours afterward. A phenolsulphonephthalein test was performed at the same time, half the urine being used for the phenolsulphonephthalein measurement, and half for the urea determination.

In a series of thirty-five such determinations, those recorded in the accompanying table are selected as representative of the various types of renal and cardiovascular disease encountered.

It will be noted that in general the urea concentration for the second hour (column headed urease) closely approximates the phenolsulphonephthalein elimination. (The same figures are represented graphically in the chart.) A normal person (Case 24) excreting 68 per cent. phenolsulphonephthalein concentrates to 2.9 per cent. A second normal person (Case 26) who was able to eliminate only 50 per cent. phenolsulphonephthalein concentrates to 2.7 per cent. In mild chronic nephritis (Case 15) with an elimination of 50 per cent. phenolsulphonephthalein and a normal blood urea nitrogen, the concentration of urea falls to 1.75 per cent. Moderately severe chronic nephritis (Case 25), with a phenolsulphonephthalein elimination of 25 per cent. and a blood urea nitrogen of 17, concentrates to but 1.3 per cent.; and severe chronic nephritis (Case 7), with only traces of phenolsulphonephthalein and a blood urea nitrogen of 124, concentrates to only 0.8 per cent.

The exceptions to this parallelism are noted in Cases 10 and 22 (shown graphically in the chart) recorded clinically as mild chronic nephritis, with phenolsulphonephthalein eliminations within normal limits but failure to concentrate to the normal figure of 2 per cent. It is hoped that in just such cases the new urea concentration test will be found of decided value in diagnosis.

THE "UREA CONCENTRATION TEST" COMPARED WITH OTHER FUNCTIONAL METHODS IN THE STUDY OF RENAL DISEASE

Case	Age	Clinical Diagnosis	Blood Pressure	Eye Grounds	Urinalysis: Specific Gravity	Urinalysis: Albumin	Urinalysis: Casts	Blood Urea, Mg.: Before	Blood Urea, Mg.: After	Phthalein 2 Hr., per Cent.	Urine: Concentration Before	Urine: Amount Excreted 2 Hr., Gm.	Urea Concentration 2d Hour: Urease	Urea Concentration 2d Hour: Hypo.	Comment
24	24	Normal	120	.....	1.020	—	—	15	23	68	3.2	4.15	2.9	2.65	
26	25	Normal	108	.....	1.018	—	—	17	25	50	2.7	4.36	2.7	2.15	
10	50	Chronic interstitial nephritis	160	Negative	1.012	++	—	18	29	75	2.0	4.49	1.3	1.2	
22	42	Chronic interstitial nephritis	200	Pale disk; cont. vessels	1.015	++	Hyaline	26	40	60	2.4	4.01	1.6	1.5	
20	35	Chronic nephritis	130	Negative	1.015	+++	Granular	17	33	50	...	2.99	1.8	1.7	
15	40	Mild chronic nephritis	140	Negative	1.020	+	Hyaline	13	21	50	2.0	3.77	1.75	1.4	
19	45	Cardiovascular	230	Negative	1.010	++	Hyaline; granular	14	29	50	1.15	3.43	2.0	1.95	
13	34	Chronic interstitial nephritis	110	Negative	1.010	+	Hyaline	16	32	45	1.04	1.16	1.9	1.5	Death; uremia*
11	42	Chronic interstitial nephritis	208	Retinitis	1.015	+++	Hyaline; granular	18	30	40	1.0	2.5	1.0	0.9	Death; apoplexy
9	63	Chronic interstitial nephritis	160	—	1.010	++	Hyaline	27	40	30	0.8	1.77	1.3	1.2	
25	58	Chronic interstitial nephritis	170	—	1.006	+	—	17	32	25	0.7	2.07	1.3	1.05	
23	49	Chronic interstitial nephritis	230	—	1.004	++	Hyaline; granular	38	60	17	...	1.6	0.9	0.7	Death; uremia
14	29	Chronic interstitial nephritis	220	Retinal hemorrhage	1.009	++	Hyaline; granular	76	90	10	1.0	1.3	0.9	0.7	
8	54	Chronic interstitial nephritis	210	Retinitis	1.014	+	Hyaline; granular	76	86	10	1.0	1.85	0.9	0.5	
21	53	Chronic diffuse nephritis	200	Retinitis	1.002	+	Hyaline	40	60	5	...	1.59	0.9	0.85	
18	53	Mercuric chlorid poisoning	140	Negative	1.012	++	Granular	156	171	traces	1.1	0.767	0.85	0.7	
16	40	Chronic nephritis	236	..	1.010	+	Hyaline	97	106	traces	...	6.719	0.8	0.8	Death; uremia
7	30	Chronic diffuse nephritis	160	Negative	1.010	++	Hyaline; granular	124	132	traces	0.78	0.63	0.8	0.8	

* Necropsy. † Diuresis, first hour.

VALUE IN PROGNOSIS

In those cases showing a progressive lesion, the test demonstrated the downward course of the disease. Thus, Case 13, a chronic nephritis with an acute exacerbation following ether anesthesia, showed an initial concentration of 1.9 per cent. Ten days later—

10. MacLean, H., and DeWesselow, O. L. V.: On the Testing of Renal Efficiency, with Observations on the "Urea Coefficient," Brit. J. Exper. Path. 1:1 (Feb.) 1920.

one week before the death of the patient—she concentrated to but 1.5 per cent. A partial necropsy was obtained, at which the kidney was found to show a recently engrafted glomerulotubular lesion on a chronic interstitial nephritis.

Case 18, mercuric chlorid poisoning, which will be reported with more detail in connection with the clinical data later, showed a progressive rise of urea concentration from 0.85 per cent. (July 27, 1920) to 1.85 per cent. (September 15), the date of the patient's discharge, clinically cured. This progressive rise of concentrating power closely paralleled the phenolsulphonephthalein excretion and curve of blood urea.

Case 19, representing one of the several similar cases of cardiovascular disease, showed, in spite of positive urinary evidence, a normal urea concentrating power. It is suggested that the urea concentration test may be of value in aiding to differentiate renal congestion and true nephritis.

It will be noted that the columns headed urease and hypo (hypobromite), although closely approximate, do not absolutely agree, so that in the performance of the test the urease method of urea determination rather than the hypobromite method is advised, when possible.

While in general it may be said that the urea concentration for the two hour period preceding the test, and the amount of urea excreted in two hours after urea administration, follow the urea concentration, they are not rigidly parallel, and no importance can be attached to their estimation.

The blood urea nitrogen, before administration of urea, fairly closely follows the urea concentration: the lower the concentration, the higher the blood urea. No conclusions could be drawn from the blood urea figure at the end of the second hour; some mild or moderately severe cases showed a higher rise than the most severe cases, in which, because of the deficient elimination, it would be expected.

SUMMARY

In this series of determinations the urea concentration appears as a reliable test for kidney function. In accordance with Christian's views, however, it is recommended that, as there is no ideal test for kidney function, the urea concentration test be performed together with other well known methods, the whole being weighed with the clinical data before conclusions are drawn.

The urea should be estimated by the urease method when possible, although it is believed that even the ordinary hypobromite method willl give an approximate index of kidney function. We sincerely trust that the test will be adopted by other observers in the hope that it will justify our belief as to its value in the early recognition of chronic renal disease.

Youthful Blood in Treatment of Cancer.—Rollin reported at a meeting of the Hamburg Medical Society, June 1, 1920, that two persons with extensive and advanced gastric cancer were treated by intragluteal injection of 2 c.c. of blood, twice a week, from their grown-up children. Both improved visibly, the hemoglobin percentage rose and the weight increased as appetite returned, and the earning capacity was restored. Rollin had reasoned that there must be something in the blood of the young that prevents the development of cancer, and hence that there would be advantage in injecting it in cases of cancer. The *Medizinische Klinik* of November 28 relates that Kümmel gave this method a trial in three cases of cancer, injecting the blood of young relatives. The general health improved, but this benefit was transient. The malignant disease itself was not influenced.

PROTEIN AND CARBOHYDRATE EQUIVALENTS IN THE DIABETIC DIETARY

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How to make the diabetic layman, often uneducated and with little or no real knowledge of arithmetic, the equal of or better than the average physician in a special field of practical dietetics is the problem that is familiar to any physician who treats this class of patients.

It is no longer permissible for the physician to direct that certain foods which are rich in carbohydrate be gradually eliminated from the diet until the urine becomes sugar-free, leaving the daily intake of protein and fat to the whim and appetite of the patient, for it is now well known that such practice is often responsible for the maintenance of high blood sugar (though there is no glycosuria) as well as acidosis. In other words, one must reckon the daily quota of protein and fat, as well as of carbohydrate. To do this it is necessary for the patient to use scales until he is so well acquainted with the size of the portions of food which he may take that the weighing is dispensed with; and since scales must be bought, he should buy the ones which are best—those graduated in grams, with which it is easiest to use the standard tables giving the percentage composition of foodstuffs.[1]

Joslin's classification of vegetables and fruit according to their carbohydrate content, and his little table showing the composition of one ounce portions of the more important foods, have done much to popularize the accurate determination of a patient's tolerance by physicians; but, unfortunately, the patient is often discharged from the hospital, after two or three weeks of painstaking laboratory analyses and dietetic calculations, with only the knowledge of how to test his urine for sugar, and the same general instructions that were given under the old method of treatment. Why ascertain that the blood sugar is 0.14 per cent. and the carbohydrate tolerance is 67 gm., unless the patient is to be equipped with scales and a practical dietary in order that he himself may obtain the benefit from his sojourn in the hospital?

In reckoning the daily intake of protein, fat, carbohydrate and calories, Joslin has advised the physician "not to take his figures too seriously," and Allen [2] has struck "fictitious decimals" out of his diet lists, recognizing that absolute accuracy is impossible in practical dietetics. Cornwall [3] recently presented an excellent diabetic dietary made up along these lines, with the sole disadvantage that the substitution of one food for another has not beeen made as easy for the layman as is possible.

In the present diet list each portion in the protein table contains approximately 6 gm. of protein, this quantity being chosen because it is the protein content of eggs, certain diabetic muffins, rolls, etc. Each of the carbohydrate portions contains approximately 5 gm. of carbohydrate, for with the average case of diabetes it is hardly practical to give orders for variations in the patient's diet of less than 5 gm. The portions of fat have not been made equivalent because the standard

1. Allen recommends such a scale as that manufactured by John Chatillon & Sons, New York.
2. Allen, F. M.: Diabetes Mellitus, Nelson Loose Leaf Medicine, New York, 1920, Volume III.
3. Cornwall, E. E.: A Diabetic Dietary, J. A. M. A. 75:1642 (Dec. 11) 1920.

quantities of butter, oil, cream, etc., can soon be learned, and the high fat quota does not make substitution as necessary as in the case of protein and carbohydrate. The patient's attention must be directed to the protein content of certain carbohydrate portions, and in case of severe diabetes he should be cautioned concerning the carbohydrate content of milk and nuts—or these may

DIABETIC DIETARY

	Weight of Portion, Gm.	Protein	Fat	Carbohydrate
A. Protein equivalents (6 gm. each):				
Lean meat, poultry, cooked	22	6	3	0
Roast, medium fat	22	6	6	0
Fish, lean (cod, haddock, etc.)	30	6	0	0
fat (salmon, shad, etc.)	30	6	3	0
Oysters, six average	..	6	1	3
Ham, boiled, sliced	30	6	7	0
Bacon	30	6	10	0
Pork sausage	30	6	10	0
Beef soup (not greasy)	150	6	1	1.5
Egg, one	60	6	6	0
Egg white, two	..	6	0	0
yolk, two	..	6	12	0
Cheese, American	20	6	7	0
cottage	30	6	0	1
Casein flour muffin (Joslin), one	..	6	6	0
Calf's foot jelly (with saccharin)	45	6	0	0
Milk, three-fifths glass	150	6	6	7
Almonds, walnuts	30	6	18	5
Brazil nuts	35	6	24	2
Peanuts	35	6	9	5
Pecans	45	6	31	6
B. Carbohydrate equivalents (5 gm. each):				
Asparagus, cabbage, celery, chard, cauliflower, cucumber, eggplant, grapefruit, greens, leeks, lettuce, okra, radishes, rhubarb, stringbeans, spinach, sprouts, tomato	150	2	0	5
Beets, carrots, mushrooms, onions, squash, turnips	75	1	0	5
Canned lima beans, green peas, parsnips	35	1	0	5
Green lima beans, green corn	25	1	0	5
Orange, one half small	75	0	0	5
Lemon juice	50	0	0	5
Blackberries, cranberries, muskmelon, peach, pineapple, strawberries	75	0	0	5
Alligator pear	75	1	15	5
Apricots, cherries, huckleberries, pear, raspberries	30	0	0	5
Apple, banana, grapes, plums, prunes	25	0	0	5
Oatmeal, boiled	45	1	0	5
dry	6	1	0	5
Wheat cereal porridge	30	1	0	5
Macaroni, hominy, boiled, potato, baked, boiled, rice, boiled	25	0.5	0	5
Baked beans, canned	25	2	0.5	5
Bread	9	1	0	5
Cracker	7	0.5	0	5
Olives, green	60	0.5	10	5
Cream, 20 per cent.	150	5	30	5
40 per cent.	150	5	60	5
Milk, one half glass	120	4	5	5
Wheat flour, 75 per cent. carbohydrate				
Molasses, 70 per cent. carbohydrate				
Sugar, 100 per cent. carbohydrate				
C. Portions by which fat may easily be added:				
Butter, 85 per cent. fat (3 pats)	30	0	25	0
Olive oil, lard, etc., 95 to 100 per cent. fat (1 level tablespoonful)	15	0	15	0
Mayonnaise, home-made (1 level tablespoonful)	15	0	15	0
Bacon, cooked	36	6	18	0
Cream, 20 per cent. (1 level tablespoonful)	15	0.5	6	0.5
Cream, 40 per cent. (1 level tablespoonful)	15	0.5	12	0.5
Alligator pear	100	2	20	7
Nuts, olives, etc. (see above)				
D. Miscellaneous (to be added at the physician's discretion):				
These articles may be added to the dietary without allowing for their food value: coffee, tea, washed bran, agar agar, cellulose flour, saccharin, liquid petrolatum (instead of lard), etc. To obtain the total number of calories multiply the total grams of protein by 4, of fat by 9, and of carbohydrate by 4, and add the results. The average daily requirement is 10 to 15 calories per pound (25 to 35 per kilogram).				

be struck from the list. In calculating the total number of calories it is easier to multiply the total grams of protein, fat and carbohydrate by 4, 9 and 4, respectively, so the caloric values of the individual portions are not given.

It is believed that these advantages are offered by the present arrangement:

1. Substitution of one food for another requires no arithmetic, so variety, one of the diabetic's chief desires, is made as easily attainable as possible.

2. With such a dietary, scales and knowledge of simple addition, it is easy for even the uneducated person to limit himself to the prescribed number of grams of protein, fat and carbohydrate. For instance, if a patient's prescription reads: protein, 65 gm., carbohydrate, 35 gm., and fat, 150 gm., he may be told to weigh on his scales nine or ten protein portions, and seven carbohydrate portions (which also contain some protein), marking down the protein, fat and carbohydrate content in each case. After these figures have been added, the required amount of fat is weighed or measured.

3. Less arithmetic is necessary than when each portion weighs the same but has a different composition, so it is easier to acquire such a knowledge of the individual portions that the use of the scales may at times be discontinued.

REACTION OF NORMAL SKIN TO DESTRUCTIVE DOSES OF ROENTGEN RAY

ITS DECREASE BY PHARMACOLOGIC MEANS, AND THE MECHANISM INVOLVED *

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While testing a certain hypothesis [1] from another angle, an observation was made which seemed to indicate that the resistance of the skin to massive, destructive doses of the roentgen ray could be considerably increased. The original plan was therefore temporarily abandoned and the new lead followed. The outcome of the investigation was that the resistance of the skin to the roentgen ray could be raised experimentally to a noteworthy degree.

METHOD EMPLOYED

Ten rabbits were sensitized by four spaced, subcutaneous and intramuscular injections of horse serum, each 1 c.c. Ten days after the last sensitizing dose these rabbits and five additional normal ones were irradiated locally with thirty skin units of unfiltered roentgen rays (Remer-Witherbee formula [2]): Coolidge tube, 3 inch spark gap, 10 milliamperes, 6 inch distance from target, twenty minute exposure. The site of exposure was the right ear, and the area irradiated was 4 square centimeters. The rest of the ear and body was protected by a sheathing of lead. It should be emphasized that the procedure exposes two skin surfaces to the action of the rays; the external ear surface is affected on entry, and the internal skin surface on exit of the rays.

Thirteen days after this local irradiation and twenty-three days after the last sensitizing dose of serum, five rabbits of the sensitized group and the five normal controls were injected intraperitoneally with 10 c.c. of horse serum. There are thus three groups of rabbits (as in the accompanying chart) all of which had been irradiated with the same dose on the same day: five were normal rabbits injected once with horse serum (horse serum controls); five were sensitized but *not* reinjected (sensitized group), and five were sensitized and reinjected with serum (sensitized-reinjected group). These three groups of animals were now kept under observation for months. It should be added that during the prepara-

* From the Laboratories of the Rockefeller Institute.
* Read before the Society for Pharmacology and Experimental Therapeutics, Dec. 29, 1920.

1. Auer, John: J. Exper. Med. **32**: 427 (Oct.) 1920.
2. Witherbee, W. D., and Remer, John: A Practical Method of Roentgen-Ray Dosage Without the Aid of a Radiometer, Arch. Dermat. & Syph. **1**: 558 (May) 1920; Unfiltered and Filtered X-Ray Dosage, Am. J. Roentgenol. **7**: 485 (Oct.) 1920.

tion of these groups one out of each died; each group, therefore, consisted finally of four animals.

The results were interesting, but only the main points can be reported here.

The horse serum controls showed dry gangrene and fenestration in the rayed area of the ears in thirty-six, forty-seven, fifty and fifty days, respectively.

The sensitized and reinjected groups developed dry gangrene and fenestration in fifty, fifty-two, sixty-two and eighty-five days, respectively.

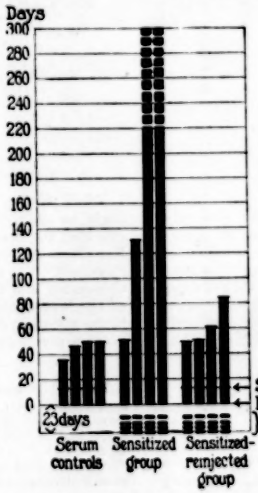
The sensitized group, however, responded differently, on the whole. One rabbit developed gangrene and fenestration in forty-six days. A second rabbit showed a similar result only after 131 days. The two remaining rabbits have shown no gangrene up to date, more than 214 days so far. These ears are not thickened, there is permanent local alopecia, and the bald surfaces are covered with a thinner skin than normal; the vessels of the irradiated area show some changes: dilated, tortuous, fine vessels appear about the neighborhood of the central artery, and the artery itself is slightly narrowed; there is some periarterial thickening apparently.

COMMENT

In the serum controls, fenestration of the irradiated ear occurred in all rabbits within fifty days; in the sensitized-reinjected group, it occurred in all within eighty-five days; in the sensitized group, however, one rabbit showed fenestration within forty-six days; a second rabbit only after 131 days, while the remaining two rabbits have so far developed no gangrene even after the lapse of more than 214 days. The accompanying chart shows these facts graphically.

It is thus seen that under the conditions of the investigation, mere sensitization of rabbits with a foreign protein, previous to irradiation, powerfully increases the resistance of the skin and tissues to the destructive action of heavy doses of the roentgen ray. The experiments also demonstrate that this protection is largely, though not entirely, abolished when the sensitized animals are reinjected with the same protein.

From these experiments some inferences may be drawn which have theoretical as well as practical interest. Examination of the text and the accompanying chart shows that there is only one difference between the sensitized group and the sensitized-reinjected group: the sensitized-reinjected group was subjected to a serum injection thirteen days after the date of irradiation, while this was omitted in the sensitized group. Only in the sensitized-reinjected group, therefore, could an anaphylactic reaction appear.[3] Now it is generally accepted that an anaphylactic reaction is initiated when the anaphylactic antibody in the sensitized organism comes into contact with the antigen which produced this reaction body. Moreover, it is a matter of experimental knowledge that the anaphylactic antibody disappears during the anaphylactic reaction (Anderson and Frost). Therefore, the practical abolition of protection against a heavy dose of roentgen rays which the sensitized-reinjected group shows, when compared to the sensitized group, may perhaps be the result of the loss of the anaphylactic antibody which occurred during the anaphylactic reaction.



Day of appearance of dry gangrene after irradiation.

Another inference may be derived from the experiments described above. It follows, if the anaphylactic antibody is responsible for the protection to the roentgen ray observed in the sensitized group, that this protection must be due to the antibodies which are anchored to the tissue cells exposed to the ray, and not to the circulating antibodies. This is shown by the animals of the horse serum control group. In this group only one injection of serum was given, and this was administered thirteen days after the local irradiation of the ear. An abundance of antibodies therefore surely appeared in the circulation within seven days, and these necessarily must also have passed through the capillaries of the irradiated area of the ear. Yet no protection whatsoever was given, for in this group of serum control rabbits, gangrene in the irradiated portion took place within fifty days after exposure to the rays. It appears, therefore, that the cells of an irradiated area are unable to produce anaphylactic antibodies or to fix these bodies, when present in the circulation, in sufficient amount to protect, provided the local irradiation takes place before the injection of antigen.

Another consequence of this view is that the locally fixed anaphylactic antibody (sensitized group) can be removed by an anaphylactic reaction (sensitized-reinjected group), and the local protection which these fixed bodies gave to the action of the roentgen ray is then abolished.

It is possible that these results may be of some benefit in the human subject when employment of the roentgen ray is indicated. For example, in more or less deeply seated cancers the dose of roentgen ray applicable is definitely limited by the tolerance of the overlying skin, and a lethal dose for the cancer cells frequently cannot be given because it would also destroy the integument. This suggestion presupposes that the sensitization does not increase the resistance of the cancer cells to the same degree as that of the skin cells.

AGREEMENT WITH OTHER WORK

The only reference in the literature bearing directly on our work is an incidental observation made by Hektoen,[4] who studied the effect of the roentgen ray under various conditions on the production of antibodies in the white rat, rabbit and dog. The observations which concern us most were as follows: When young dogs a few weeks old were subjected in toto to strong doses of the roentgen ray before they were injected with antigen (10 per cent. rat or goat blood suspensions) they may develop severe burns;[5] if, however they were irradiated about seven days after the antigen injection,[6] Hektoen apparently saw no burns, for he states only that now many dogs showed no marked disturbances of the general health. If we are correct in this interpretation of Hektoen's work, our observations are in gratifying accord in this respect.

3. This was very mild, judging from the general symptoms that were observed.

4. Hektoen, Ludvig: J. Infect. Dis. **29**: 28 (Jan.) 1918, in which references to his earlier work are given; ibid. **27**: 23 (July) 1920.
5. Hektoen, Ludvig: J. Infect. Dis. **29**: 29 (Jan.) 1918.
6. Hektoen, Ludvig: J. Infect. Dis. **29**: 31 (Jan.) 1918.

MENTHOL AND PEPPERMINT IN ACUTE CATARRHAL CONDITIONS OF THE RESPIRATORY TRACT*

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The explanation of the action of menthol and peppermint in common colds is unsatisfactory and apparently avoided. Most books on pharmacology and therapeutics simply state that these drugs are used in various neuralgias, in sciatica, pleurodynia and toothache, locally against headache, itching, etc., and omit their more common use. By far the greatest use is in colds, and especially those in which mucous exudation blocks the respiratory passages. The relief in many of these cases, so remarkable and so well known to the laity, accounts for the numerous brands of menthol cough lozenges on the market.

The pathology of the catarrhal conditions in which these drugs are used is well known. During some stage of the condition there is an increase of relatively thick mucous material poured into the respiratory passages, and the walls of the passages are swollen and tend to adhere, thus preventing the entrance of air. Relief can be gained only in two ways: either by removing the material or by changing its form so as to allow air to enter. When menthol is used the offending material is often not expelled, so that its physical state must be changed. One knows from experience that menthol apparently opens respiratory passages and that one can breathe through passages which before were occluded. Since it is not an astringent, the most obvious explanation is that much of the mucous material is in a foamlike consistency. One view or theory of the physical structure of protoplasm is that it is a foam (Bütchli, 1898) and this alveolar or foamlike structure may also be demonstrated in exudates such as mucus. It is also known to physiologists that if a normal lung collapses there is considerable tendency for the walls of the alveoli to adhere; so much so, that if a sufficiently high pressure to tear them apart is applied too quickly, there is great danger of rupturing the walls. This is why in surgery of the chest, when the chest wall is opened, a continuous insufflation of the lung is advised. These facts all sustain the view that the effect of menthol may be due to a change in surface viscosity.

To test the effect of menthol or oil of peppermint on surface viscosity, with a suction filter pump I drew a current of air through solutions of soap, blood, saliva and saponin. Each of these, especially the soap, saponin and blood, foam readily. The merest trace of menthol or spirit of peppermint added to these solutions rapidly destroys the foam. Crystals of menthol may be added of these excessive conditions apparently without much effect. The foam in such conditions is so strong that it readily supports the crystals, and to be effective the drug must be in solution or in a condition in which volatility can act. Menthol, however, dissolved in saliva has a noticeable effect, and in alcohol the effect is still stronger, because of greater solubility. In another experiment in which we had a tracheal cannula in a dog anesthetized with ether through the trachea, marked tracheal râles developed. Râles develop frequently in such cases. A few drops of the spirit of peppermint in the trachael cannula immediately broke the foam and noticeably relieved respiration. We have therefore a reasonable basis for the statement that the efficacy of menthol and peppermint in the respiratory passages is due to changes in the surface viscosity of the mucus and on the membranes producing the exudate.

The most important investigation of menthol was that of Pellacani in 1883,[1] and in that work he does not discuss the action on the respiratory passages. We have thought it worth while, therefore, to call attention to the surface tension and surface viscosity effect of menthol. Surface viscosity holds the foam or bubblelike structure together, while surface tension tends to break them. Soapy water and saponin solutions make good bubbles because surface tension is small and surface viscosity large. Ordinary respiration in catarrhal conditions in a measure simulates the experiments in which we passed a current of air through a soapy solution, and menthol inhaled in such conditions lessens the viscosity and, by changing the surface tension, aids in breaking the foam and clearing the passage way.

An important and well established fact in viscosity is that the viscosity of a liquid is increased about 2 per cent. for each degree that the temperature is lowered. This is of great importance in the treatment of all respiratory cases in which the expulsion of mucus is desired. Warm, moist, respired air will greatly aid the expulsion, while cold air, if respired, will increase the difficulty. What I have said of menthol and peppermint undoubtedly can be extended to other substances of this general class.

* From the Laboraory of Pharmacology and Therapeutics, University of Illinois College of Medicine.

1. Pellacani: Arch. f. exper. Path. u. Pharmakol. **17**: 376, 1883.
1. Haskell, C. C.; Hileman, S. P., and Gardner, W. R.: The Significance of the Acidosis of Methyl Alcohol Poisoning, Arch. Int. Med. **27**: 71 (Jan.) 1921.

THE ALKALI RESERVE IN ABDOMINAL INFECTION

AND ITS RELATION TO THE LEUKOCYTE COUNT

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The significance of "acidosis" is not clearly understood. Some accord it the importance of a clinical entity, viewing the reduction of the reserve alkali as being, in itself, sufficient to cause the various pathologic manifestations associated with it. This has been by no means proved, however, for there is evidence that the so-called acidosis is merely one of the results of a common cause. Of course, this is well recognized in the acidosis of diabetes and nephritis; but even under these conditions, many hold that good may be accomplished by the administration of sodium bicarbonate in order to give relief to the distressing symptoms of air hunger and coma. Apparently, favorable results do not always follow the use of alkali therapy even in the presence of a marked reduction of the reserve alkali, for such an authority as Joslin disapproves of this procedure in diabetic acidosis, and it has proved unsuccessful in decreasing the toxic action of methyl alcohol for dogs,[1] though its use may keep the reserve alkali at a high level. Indeed, a number of authors have called attention to the dangers that attend the intravenous injection of sodium bicarbonate, so that its administration in this way to patients suffering from acidosis may not only fail to do good but may actually work serious harm or cause death. With these facts in mind, it behooves us to be certain that an acidosis

exists before considering the advisability of administering sodium bicarbonate, for some experiments at the Medical College of Virginia indicate that even the cautious injection of large amounts into normal dogs is not devoid of danger.[2] The recent developments in regard to our knowledge of surgical shock serve to emphasize this point. As the result of rather overhasty generalization, it was assumed that the reduction in the reserve alkali in patients suffering from shock was responsible for the condition, and the use of sodium bicarbonate was recommended as a therapeutic measure. This procedure was found disappointing clinically, and now it is held not only that the acidosis is not the cause of shock, but also that it is not uniformly present.

The existence of an acidosis in infectious conditions has been assumed by some of the foremost surgeons. To illustrate, Crile [3] has stated that "the general symptoms—accelerated pulse and respiration, raised blood pressure, increased temperature and rapid loss of strength and weight—indicate the presence of some acid-forming activation. . . . The prime problem of abdominal infection, therefore, is the same as the prime problem of abdominal surgery in general—the reduced resistance and mounting acidosis of the patient." To combat the acidosis, he recommends the employment of 5 per cent. solution of sodium bicarbonate by rectum.

It is not surprising to find, therefore, that many of the rank and file have followed such distinguished leadership, and that sodium bicarbonate is extensively used in the treatment of abdominal infections. Fortunately, the soda is usually administered by rectum, a method much less dangerous than the injection into a vein, but not, I believe, entirely devoid of the possibility of doing harm when used carelessly. From clinical observation, I have failed to observe any benefits that I could attribute to the action of the soda. During the course of some experiments that I have recently carried out in producing peritonitis in dogs, I was struck by the fact that in fatal cases, a considerable number of the animals manifested convulsive seizures shortly before death. Knowing that an excess of alkali in the blood also might cause convulsions, the question was suggested whether there might not be an actual increase in the reserve alkali of the blood instead of the reduction that was formerly suspected.

In order to answer this question, the blood of seven dogs that succumbed to peritonitis was studied, as well as the blood of one dog that was critically ill with peritonitis but recovered eventually. The peritonitis was produced either by incising the colon or by injecting intraperitoneally the exudate that had been secured from animals succumbing to a perforative peritonitis. The method of Van Slyke and Cullen for determining the carbon dioxid combining power of the plasma was used to estimate the reserve alkali of the blood. Samples were obtained from the external jugular vein and placed in centrifuge tubes containing a small amount of oxalate and sufficient liquid petrolatum to cover the blood. The samples were centrifuged within a few hours, and the carbon dioxid combining power determined within eight hours in every instance.

The dogs used in these experiments were apparently all healthy, though no exhaustive study was made to determine this point. They were usually kept forty-eight hours on a diet of wheat bread and meat scraps, the proportions varying considerably. The carbon dioxid combining powers of the seven animals succumbing to the peritonitis varied from 43.8 to 53.6 volumes per cent. before any operative procedures. Three of these seven dogs showed a reduction of the reserve alkali at the last determination, which was made a short time before death. The amount of the reduction may be seen in Table 1.

TABLE 1.—REDUCTION OF ALKALI RESERVE IN THREE DOGS

No. of Dog	Carbon Dioxid Combining Power of Plasma in Percentage by Volume: Normal	Carbon Dioxid Combining Power of Plasma in Percentage by Volume: Last Determination
177	44.7	42.8
186	53.6	51.3
188	51.3	41.9

The remaining four dogs all showed an increase in the alkali reserve as death approached, as shown by Table 2.

TABLE 2.—INCREASE OF ALKALI RESERVE IN FOUR DOGS

No. of Dog	Carbon Dioxid Combining Power of Plasma in Percentage by Volume: Normal	Carbon Dioxid Combining Power of Plasma in Percentage by Volume: Last Determination
178	51.3	59.8
179	43.8	57
182	50.4	53.2
187	50.4	51.3

It seems improbable that the reduction that occurred in Dogs 177 and 186 was of any importance; but that seen in Dog 188 was much more considerable. This dog received an intraperitoneal injection of 50 c.c. per kilogram of physiologic sodium chlorid solution, which may have been responsible for the apparent reduction of the reserve alkali. On the other hand, none of the dogs showed an increase in the carbon dioxid combining power of the blood sufficient in amount to give rise to an "alkalosis," so it is improbable that the convulsions had any connection with the changes in the alkali of the blood.

The opportunity occurred also to examine the blood of three patients who were under my care.

REPORT OF CASES

Case 1.—H. C., a negro man, aged 19, single, farmer, whose family and past history was negative, admitted, Aug. 21, 1920, had been seized four days before with severe abdominal pain, accompanied by nausea and vomiting. He was well developed, and apparently ill and toxic. There was generalized abdominal rigidity, most marked in the right iliac fossa. The patient was slightly irrational at times.

August 22, the temperature was 102; pulse, 110; leukocytes, 19,200; carbon dioxid combining power of the plasma, 50 volumes per cent. Saline solution was given by rectum and subcutaneously. Three days after admission, an appendical abscess was opened and drained. September 1, the patient was discharged, well.

Case 2.—T. E. K., a white man, aged 49, married, whose family and past history was negative, admitted, Sept. 18, 1920, had been seized, two days before admission, with severe generalized abdominal pain. He was nauseated and vomited twice during the night. He was given castor oil. On the way to the hospital he had a chill, lasting several minutes. He was rather fat, very ill and uncomfortable. There was marked rigidity and tenderness in the right iliac fossa. At 8:50 p. m., the temperature was 100.5; pulse, 106; leukocytes, 13,600; carbon dioxid combining power of the plasma, 54.1 volumes per cent.

2. Personal communication to the author from Dr. Haskell.
3. Crile, G. W.: The Treatment of Peritonitis, J. A. M. A. 73: 1655 (Nov. 29) 1919.

Operation revealed a gangrenous appendix with considerable free fluid in the cavity. Convalescence was rather protracted. He was discharged, September 30.

CASE 3.—J. M. P., a white schoolboy aged 18, whose family and past history was unimportant, admitted, Nov. 25, 1920, had had some indigestion for the last three weeks. Seven and a half hours before operation, he was seized with agonizing epigastric pain, necessitating the use of morphin. The boy was well developed. There was boardlike rigidity of the abdominal muscles. The temperature was 99.5; pulse, 95; leukocytes, 14,000; carbon dioxid combining power of the plasma, 74.8 volumes per cent. A right rectus incision allowed the escape of gas and purulent material. A punched out perforation of a duodenal ulcer was disclosed and repaired.

COMMENT

These results would seem to indicate clearly that acidosis is not an important factor in the course of peritoneal involvement. The paper of Hirsch,[4] which appeared after the completion of my experiments is, in a measure, confirmatory. This author finds that "infection" in rabbits is followed by an initial drop in the alkali reserve of the blood and a subsequent return to or above normal. He does not say what form of infection was produced, or report the fate of the rabbits. Coincident with the initial drop in the alkali reserve, there is, he states, a decrease in the number of leukocytes, while the increase in the alkali reserve that occurs later is accompanied by an increase in the number of white cells. In dogs, when peritonitis has been produced and counts are taken at two hour intervals, there is seen in fatal case almost invariably a steady decline in the number of the leukocytes. This reduction in the numbers of the leukocytes is out of all proportion to the reduction in the reserve alkali, the latter being, as pointed out already, insignificant as a rule. In Table 3 is given the relation that existed between the leukocyte count and the alkali reserve in the seven fatal cases and the one case that recovered from the peritonitis produced in the dogs.

TABLE 3.—RELATION BETWEEN LEUKOCYTE COUNT AND ALKALI RESERVE

No. of Dog	Hour	Carbon Dioxid Combining Power Leukocytes	Alkali Reserve
188	0	8,900	51.3
	2	5,800	....
	4	2,800	....
	6	2,600	41.9
187	0	5,600	50.4
	2	6,000	....
	4	4,200	51.3
186	0	9,300	53.6
	2	4,200	....
	4	2,800	51.3
182	0	7,200	50.4
	4	4,600	48
	8	3,800	53.2
179	0	22,800	43.8
	4	35,200	....
	8	24,000	57
178	0	22,800	51.3
	4	23,000	54.1
	24	16,000	....
	48	3,300	59.8
177	0	14,900	44.7
	4	5,900	....
	8	4,600	42.8
185*	0	12,500	47
	2	20,400	....
	4	19,500	51.3
	8	30,600	49
	22	29,800	53.2
	52	14,800	52.7

* Recovered.

4. Hirsch, E. F.: The Blood Alkali Reserve with Experimental Infections, J. A. M. A. 75:1204 (Oct. 30) 1920.

It would seem, therefore, that there is no indication for the use of sodium bicarbonate in patients suffering from peritoneal infection, if one is permitted to draw conclusions from this small number of experimental and clinical observations. Certainly, there is no justification for the routine use of alkalin therapy, and it should be limited to those cases in which appropriate tests have demonstrated a reduction in the reserve alkali to a point at which it may cause harm. Even here, the results to be obtained are problematical.

AMEBIC DYSENTERY IN SIAM

R. W. MENDELSON, M.D.
BANGKOK, SIAM

During the last twelve months, I have had occasion to examine more than 13,000 patients at the Central Hospital in Bangkok. This hospital is a charitable institution and conducts a large outpatient department, the average number of patients applying for treatment being about 1,000 a month. When necessary, patients are admitted to beds and treated as inpatients. Of the large number seen, 367 complained of intestinal troubles, of this number 135 were diagnosed and treated for amebic dysentery. It may be stated here that the clinical diagnosis in the cases so treated was supported in the majority of cases by laboratory findings, and that the differential diagnosis between *Endameba histolytica* and *Endameba coli* is not always the simple matter that many textbooks would lead one to believe. Not only have I many times experienced difficulty, but experienced men to whom material has been submitted for examination have reported a negative diagnosis on the endameba found in the stools; yet from the history of the case, its progress and the happy results from the specific treatment, one could not but help doubting the correctness of the laboratory findings.

Lambl, in 1859, discovered a rhizopod in the intestinal mucus taken from a Jewish child who died in the Kinder Spitale in Prague. His findings were at the time associated with concomitant pathologic processes in the intestinal canal, and it was his opinion at the time that there existed a very close relationship between the infantile diarrheas and the above mentioned rhizopod. Lambl's original discovery and his opinion regarding the etiologic importance of it have both been fully confirmed. More recent workers have proved beyond a doubt that *Endameba histolytica* is the exact cause of the disease now termed amebic dysentery.

In the tropics, and especially in dealing with the natives, a pure and uncomplicated case of dysentery is the exception. In the great majority of cases malaria in one form or another causes added trouble and, unless early recognized and treated, will postpone indefinitely the end-results to be desired.

The blood count in this type of case shows an increase of leukocytes up to 30,000, and the differential count shows the polymorphonuclears greatly increased. The red count does not show evidence of severe loss of fluids.

If the patient is to recover, a slight improvement will be noticed about the end of the second week. The stools become more fecal in character, the blood first gradually lessens in amount, and the last foreign element to disappear is the mucus. It is seldom that this type of disease begins convalescence before the beginning of the fifth week and often it is delayed for

several weeks, because the patient has to overcome not only the primary infection, but also a very severe secondary infection.

If the patient is not to recover, instead of the expected improvement a stationary period of from several days to two weeks or more passes, and then a weakened circulatory system gradually fails under the pressure of a severe toxemia and the patient dies.

MIXED TYPES OF DYSENTERY

As stated before, pure uncomplicated dysentery is very uncommon, especially in the native. The most common complication is malaria. In the Chinese the disease is often associated with a pulmonary tuberculosis. Following is the short history of an interesting case.

A girl, aged 15, who had had several attacks of diarrhea, and who denied any other illness, present or past, had been ill ten days when I was called in consultation. The temperature was 104 in the afternoon and 100 in the morning. It had been virtually the same from the onset, which had been acute and without chill. Physical examination revealed a fairly well preserved body. The head and neck were normal. Examination of the thorax revealed a few fine râles in back on both sides. The abdomen was tender over the colonic area, and very tender over the left tubal area. It was scaphoid and not rigid. The liver and spleen were perfectly normal. The extremities were normal. The circulatory system organically was normal. The patient was very nervous. She complained of some pain while at stool. The stools numbered from eight to ten in twenty-four hours, contained blood and mucus, and the laboratory diagnosis confirmed the bedside diagnosis of "dysentery, probably amebic." She was taken to the hospital and had a typical septic temperature for three weeks. Blood examination revealed 25,000 leukocytes and chronic subtertian malaria. The patient constantly expectorated thin, frothy material, but no blood microscopically or macroscopically. The lungs were normal except for the usual râles, thought at first to be hypostatic. Examination of the sputum was negative for tubercle bacilli, but contained thousands of spirochetes. Active treatment was maintained all the time. The patient gradually declined until the end of the third week in the hospital, when the circulatory system gave out and she died.

This patient suffered no hemorrhage; the stools numbered never more than ten daily and often not more than three or four. She received excellent nursing and every possible medical attention, yet the dysentery in combination with the malaria, the bronchopulmonary spirochetosis and a possible tubal complication were more than the patient could combat.

PROGNOSIS

It is advisable always to make a guarded prognosis, especially in complicated cases. During the last year, 115 cases of diagnosed amebic dysentery have been treated in the outpatient department of the Central Hospital. It is impossible to state how many were cured. The patients stop treatment as soon as their symptoms disappear, a characteristic of all patients, but they were all symptomatically relieved to such an extent that they thought themselves cured. In these cases we had no amebic complications, such as liver abscess, gangrene of the bowel, or stenosis of the bowel.

During the same period of time we treated as bed patients, diagnosed dysentery—this means, of course, laboratory diagnosis—twenty cases, and had two deaths. More than 50 per cent. of these cases were complicated with some other disease.

Natives stand the disease much better than Europeans, who rapidly lose ground unless sent away for a change of climate. Children of both races suffer a high death rate. Almost all of our hospital patients are adults.

TREATMENT

It is my opinion that dysentery that does not respond to emetin in one form or another will not be cured by any other treatment. It is true that symptoms may be temporarily relieved by other methods; but as a rule the result is only temporary and disappointing. Every new treatment that is suggested gets a trial at the hospital only to end in being supplanted by the hypodermic injection of emetin. I have never used a single irrigation in the bed patients in the Central Hospital.

In private cases, when the patient can afford it, I think the best method is to give a hypodermic injection of emetin, one-half grain, once a day, and 1 grain of emetin bismuth iodid by mouth three times a day.

The symptomatic and dietary treatments are, of course, added.

A CASE OF TUBERCULOSIS, PRIMARY IN THE THYROID

WILLIAM H. RENDLEMAN, M.D.
AND
JOHN I. MARKER, M.D.
DAVENPORT, IOWA

In reporting this case as tuberculosis, primary in the thyroid, we are aware that doubt is aroused of its being such. Tuberculosis had never before been diagnosed in the patient, although the early history is suspicious. Careful examination of the patient to this time has failed to show any active foci of tuberculosis elsewhere in the body. The frequency of this diagnosis has increased with the surgical removal of goiter and its subsequent pathologic study. Many of the older textbooks of pathology do not mention the condition, while the more recent give it short descriptions. Osler's "Modern Medicine" refers to the miliary form of tuberculosis occurring in general miliary tuberculosis, and to a nodular form which in some cases appeared to be primary. These cases are often considered malignant till histologic study shows the tissues in various stages of tuberculosis. Johnson's "Surgical Diagnosis" mentions only one case of the nodular type. In this case, a young woman showed other evidence of tuberculosis. The most complete American article that has come to our attention is that of Mosiman.[1] After careful review of reported cases and experimental work, he takes up nine cases from the clinic of Dr. Crile.

The case that we report is of interest because of the rarity of the condition and the close similarity to malignancy. Study of the basal metabolism in goiter cases will in the future point to the possibility of a diagnosis of tuberculosis in all those cases showing tumor and a markedly lowered basal rate when only colloid goiter is considered.

REPORT OF CASE

History.—Miss G. B., aged 22, white, engaged in housework, came to us first, Jan. 19, 1920, because of enlargement of the neck. There was no history of goiter in the family or of contact with tuberculosis. The history was negative, except for several attacks of tonsillitis and a discharging sinus over the thyroid in earlier life. This showed first at 10 years of age and healed after draining for a year. At about 12 years of age it again discharged and continued till she was 15, when it finally healed and gave no further trouble. The present

1. Mosiman: Tuberculosis of the Thyroid, Surg., Gynec. & Obst. 24:680 (June) 1917.

illness began about nine months before we saw her with gradual enlargement of the thyroid. There were no symptoms of hypothyroidism or hyperthyroidism, and the condition appeared to be a simple goiter. The patient consulted her physician because of the size of the neck and to have the goiter removed. Her weight and strength were as usual. There was slight difficulty in swallowing on account of the pressure of the tumor. She was troubled with frequency of urination in the daytime, and urinated a couple of times each night. Her menstrual functions were regular and showed no change. There was no periodic change in the thyroid with the menstrual period.

Physical Examination.—The patient appeared anemic. She weighed 130 pounds. The pulse was 72 per minute. There were no tremors, exophthalmos or other eye signs of hyperthyroid function. There were two slightly pigmented scars over the thyroid gland. The heart, lungs and abdomen were normal. Examination of the urine was negative for sugar, albumin and urobilinogen. Blood examination gave: hemoglobin, 90 per cent; red blood cells, 5,000,000; white blood cells, 5,600. The serum Wassermann test was negative. The patient was anxious for operation because of the size of the tumor, and soon after the first examination she went to the Mayo Clinic, where a basal metabolism test was made and found on two different occasions to be — 18 and — 24 per cent.

Treatment and Results.—In February, Dr. D. B. Phemister of Chicago removed the gland, which grossly was considered malignant. Microscopic examination by Dr. Phemister and later at the Mayo Clinic by Dr. Broders revealed a diffuse tuberculosis. Dr. Broders reported: "The sections throughout show fibrous tissue, diffuse dense lymphocytic infiltration, and rather numerous ill-defined to well-defined tubercles. Some of the tubercles contain giant cells, but the majority do not. A few thyroid acini lined with flat and cuboidal cells can be seen completely obliterated. Pathologic diagnosis: diffuse noncaseating tuberculosis of the thyroid."

After operation the neck again increased in size till the circumference was as great as the preoperative measurement. From March 23 to June 1 the patient was given four massive doses of deep roentgen-ray treatment, and the size of the neck became normal.

After the patient came under observation she developed gradually the clinical signs of myxedema, which the first basal metabolism test showed should appear. The patient became dull mentally and answered questions slowly. The weight, which was 130 pounds on the first examination, increased to 142 pounds before thyroid extract was given. The skin became thick and dry and the hair thinned on the scalp, over the pubes and in the axillae. The blood pressure gradually decreased and gave the readings, systolic and diastolic: January, 110/80; May, 98/80; July, 92/80 mm. of mercury. The patient appeared markedly anemic, but the hemoglobin was 86 per cent. The pulse was as low as 60 per minute.

Although the diagnosis of myxedema was definite, we felt justified in withholding thyroid extract till the basal metabolism could be again studied and the dosage controlled by oxygen consumption readings. In September the basal metabolism was — 23 per cent., and the patient was given 1 grain of thyroid extract three times daily. This was given four days, when the metabolism was — 6.3 per cent. and — 8.4 per cent. on successive days, and the pulse was 74 per minute. The dosage a week later was increased slightly, when the pulse became rapid and the patient was troubled with insomnia. The basal metabolism reading at this time was + 10 per cent. The patient was then sent out to report again in one month. During this time she was to take 2 grains of the thyroid extract each morning after breakfast. This, however, proved to be too much, and by letter she was advised to drop the dose to one tablet every other morning. At the end of the month's time the basal metabolism was + 6 per cent. and the pulse was 66 per minute. She was feeling good and seemed more normal to her people than she had for the last nine months. The weight dropped to 123½ pounds. With the idea of giving her rather too little thyroid than too much, she has been taking the extract every third morning in grain doses. She feels well and will be kept on this dose unless symptoms of deficiency should appear.

This case was of interest to us, first, because of the comparative rarity of tuberculosis primary in the thyroid. The observation that basal metabolism was lowered before any signs of myxedema developed gives an added interest to metabolism readings in all cases of thyroid involvement, even though the case seems to be only simple goiter. The lowering of approximately 20 per cent. in the basal metabolic rate both before and after operation and treatment we interpret as showing the practically entire lack of thyroid tissue in the gland at the time of the first examination.

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Clinical Notes, Suggestions, and New Instruments

MOTOR SUCTION OR VACUUM APPARATUS FOR REMOVAL OF BLOOD FROM THROAT IN TONSILLECTOMY

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A large number of men are doing nose and throat work, and there is a rapid increase in the use of some form of motor suction or vacuum apparatus for the removal of blood from the throat in tonsillectomies. It is evident that better work can be done with the assistance of such a machine than without one. At home I never operate without one, but it happens at times that some of these operations have to be performed in the country where there is no electricity.

Last month I drove 100 miles to operate on several persons and carried with me my "Mueller vacuum," but found when I arrived that the current was direct, while my machine was operated by alternating current.

I drove my automobile up to the room that I was to use as an operating room, disconnected the suction to the vacuum feed, and connected this to a rubber tube which I ran through the window (most places in the country are on the first floor) and connected this to one of the bottles. The tube coming out of the other side of the bottle was connected to the tip that goes into the patient's mouth. I started the engine, using the gas in the vacuum feed, and I had a complete suction machine which worked as well as any driven by electricity. As I had to perform several operations, to keep the vacuum feed filled I had to take off the little plug at the top, and into this I inserted the tip of a fountain syringe. The bag was filled with gasoline, and was let in as needed.

In view of the number of tonsils that are being removed in the country, this suggestion should be of help to a good many men.

A RAPID METHOD FOR THE DETERMINATION OF WATER-SOLUBLE VITAMIN B

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On reading the description by R. J. Williams[1] of a method for the gravimetric determination of water-soluble vitamin B in solutions, it occurred to me that by applying the same principles to a volumetric method a more practicable clinical method could be evolved.

DESCRIPTION OF METHOD

The synthetic growth medium, in which yeast cells are to be grown with and without the water-soluble vitamin B, is prepared. Saccharose, 20 gm., ammonium sulphate, 3 gm., potassium acid phosphate, 3 gm., asparagin, 3 gm., calcium chlorid, 0.25 gm., and magnesium sulphate, 0.25 gm., are dissolved in distilled water and made up to 1 liter. The whole is then sterilized at 10 pounds pressure, and stored in the refrigerator.

To 30 cm. of this synthetic medium in a graduate is added 1 c.c. of a Fleischmann yeast cake measured and cut as

1. Williams, R. J.: J. Biol. Chem. 42:259 (June) 1920.

1 by 1 by 1 cm., and the whole is rubbed up with a glass rod until a complete and uniform suspension has been obtained. One half of the suspension is then placed in a centrifuge tube graduated in tenths of a cubic centimeter, and the other half is poured into a second 15 c.c. centrifuge tube similarly graduated. To one is added a portion of the vitamin-containing solution, measured out in amounts of from 0.1 to 0.5 c.c. The tubes are then stoppered with nonabsorbent cotton and incubated at body temperature. After twenty-four hours the cotton stoppers are withdrawn and the yeast cells thrown down in an ordinary centrifuge for a few minutes. An excess of growth will be found in the tube containing vitamin, and the reading can be compared with the control tube. As the amount of excess growth varies directly with the amount of vitamin, a relative determination of this substance in solutions or permanent uniform suspensions becomes practicable clinically. The term "vitamin B" index seems most convenient for this relative value so determinable. It may be thus arrived at:

$$\frac{1}{\text{amount of vitamin solution}} \times \frac{\text{reading of vitamin tube}}{\text{reading of control tube}}$$

gives the water-soluble B vitamin index per cubic centimeter of solution.

APPLICATION

I have been specially interested in applying the method to breast milk and cow's milk in the everyday problems of infant feeding. The milks were made protein free according to the method of Osborne and Mendel. It was found that milks vary exceedingly in their content of this yeast growth stimulating substance. In general, cow's milk contains more of it than breast milk.

EFFECT OF MILK ON GROWTH OF YEAST

Milk			Yeast Growth Stimulus Index
Breast milk,	A. M.		20
" "	T. G.		12
" "	R. M.		15
" "	R. H.		6
" "	O. L.		10
Cow's milk,	W. K. 1		30
" "	B. 4.		26
" "	SH. 2.		20
" "	W. K. 2.		20
" "	B. 6.		15

It is interesting to note that in the case of breast milk R. H., in which the yeast growth stimulus index was 6, the infant was not gaining, although the fat content was about 3 per cent., and the protein about 1.75 per cent. An attempt is being made to change the composition of this milk, and the results will be reported.

144 West Seventy-Seventh Street.

REPORT OF A FATAL CASE OF MALIGNANT EDEMA

PHILIP B. HOFFMAN, M.D., MARYSVILLE, CALIF.

This case presents clearly the difficulty of diagnosis, especially in cases that are sporadic and of a fulminating character. No diagnosis was made before the death of the patient.

REPORT OF CASE

History.—E. M., a Finn, aged 65, sheep herder, on the day before he became ill had eaten "Osage oranges," which are considered poisonous. Severe diarrhea, vomiting and diffuse abdominal pain continued through the night. He had made several attempts to go to camp to see that the herd was all right, but had fallen, only to rise again and struggle forward. He was finally placed in bed by a neighbor, who summoned me twelve hours after onset. I found the patient in a semi-knee-chest position, groaning, fairly rational, with subnormal temperature and a rapid pulse. He appeared toxic, the heart tones were weak and distant, there was no abdominal tenderness or distention, and the patient stated that he urinated normally.

I advised him to go to the hospital, but he refused. At 8 a. m. I gave strychnin by mouth and directed that it be administered every four hours. At 7 p. m. he was brought to the hospital, and 8 o'clock I saw him for the second time. He stated that he felt better; he had not vomited, his bowels had not moved, and he hoped that he could sleep well. He complained of soreness in the upper part of the left thigh, but I was unable to discern anything of a pathologic nature; there was no edema or discoloration of the ankles.

At 3 a. m. I was informed that he was in a noisy delirium, his pulse weak and rapid. I ordered one-quarter grain of morphin hypodermically. At 7 a. m., exactly thirty-six hours after the onset of his symptoms, he died.

Necropsy.—Inspection was negative, except for blood oozing from the urethra and for an area of bluish black about the size of a dollar over Scarpa's triangle, left thigh, that looked like an ordinary contusion. The abdomen was opened. The bladder was distended, but contained no free blood. Otherwise, examination was negative. The left thigh was then incised, and we were greeted with an outburst of odorless gas and bubbles. On further examination we found the thigh crepitant to the knee, and moderately enlarged over the right. Only the underlying quadratus femoris muscle was involved; this was black, easily friable and gangrenous, and resembled pitch rather than muscle. Gas continued to bubble for one hour through the incision, and bubbled forth freely when the leg was massaged from the knee up.

Diagnosis was now made of malignant edema, and several smears were taken from this muscle. The diagnosis was confirmed by the United States Bureau of Public Health at Berkeley, Calif. Twenty-four hours later the entire leg was black and gangrenous.

Special Articles

BIOLOGIC THERAPY *

(Concluded from page 245)

XVII. FOREIGN PROTEIN THERAPY IN THE ACUTE INFECTIONS

JOSEPH L. MILLER, M.D.
CHICAGO

During the last six years there has developed a very extensive literature on foreign protein therapy. Previous to this time there were a few references, both clinical and experimental, on the curative or protective action of nonspecific vaccines.

The real stimulus to this investigation was the report of Ichikawa and Kraus and Mazza that a certain percentage of typhoids would terminate by crisis following the intravenous injection of colon bacillus vaccine. It was soon demonstrated that the same results could be obtained with nonbacterial proteins as normal serums, proteoses, sodium nucleinate, milk and the colloidal metals. With the exception of milk, all of these agents were given intravenously.

Following the administration of any one of these substances, a febrile reaction occurs which is thought to be essential if beneficial results are to follow. As a rule, this rise in temperature is preceded by a well marked chill. In case the dosage is excessive, nausea and vomiting may occur.

Following the injection and preceding the rigor, there is usually a leukopenia followed by a polymorphonuclear leukocytosis which reaches its maximum in from two to twelve hours after the chill. The degree of leukocytosis varies, but not infrequently reaches 40,000. Apparently there is no special relation between the

* This is the fifth instalment of a series of articles dealing with serums, vaccines and nonspecific therapy.

degree of leukocytosis and the beneficial results following the treatment.

Foreign protein therapy has been used in practically all of the infections, with reported beneficial results in some cases. The various forms of arthritis and typhoid fever have received the greatest degree of attention. Other conditions in which less extensive reports are available are gonorrheal complications, pneumonia, certain dermatologic diseases, iritis, trachoma, diphtheria, anthrax, acute sepsis, tuberculosis and syphilis.

However, many of the reports are so fragmentary and so lacking in controls that it is impossible to draw any conclusions; in others the results are at least suggestive, and in still others the curative value of this method of treatment seems to have been definitely established. In those diseases, however, in which good results have been obtained, only a certain percentage of cases can be said to be cured or even improved. In the remainder the course of the disease is not modified.

As gonorrheal complications, dermatologic conditions and arthritis are to be discussed by others, the present discussion will be confined to a brief review of our present knowledge of the value of this method of treatment in other infections.

The results in the treatment of typhoid are quite uniform, regardless of what particular form of foreign protein is used. About 20 per cent. terminate by crisis following one or, at most, two or three injections. Rapid lysis occurs on an average in an additional 20 per cent. A change in the form of the fever curve with probable slight shortening of the course of the disease occurs in, roughly, 20 per cent. The course of the disease is apparently not noticeably modified in the remaining 40 per cent. (Ichikawa,[1] Kraus and Mazza,[2] Gay [3]). The most striking results have been reported by Holler [4] in 350 cases treated by intravenous injection of deutero-albumose, with only two fatalities and without hemorrhage or perforations or carriers. His method of procedure was different from that ordinarily employed in protein therapy, as he gave a small daily dose until the temperature reached normal. The temperature reaction was very slight. The termination by crisis did not occur, but the patient became less toxic and the course of the disease was shortened. As these patients were all soldiers, it is presumed that they had previously received antityphoid inoculation. This might be somewhat of a factor in the low mortality. The fear of hemorrhage, formerly suggested, is apparently not warranted. Further clinical observations are, however, necessary before it can be definitely determined that this method of treatment should be generally adopted.

This form of therapy has been used by a number of investigators in the treatment of typhus fever. Tagle [5] reports fifty-nine cases with three deaths, the fifteen controls having a mortality of 40 per cent. Reports from other sources indicate that this method of treatment lowers mortality in typhus fever.

The treatment of sepsis by foreign protein has been reported from various sources. Kraus [2] and Wilmette [6] have each reported short series of cases of puerperal sepsis. They are both quite enthusiastic, stating that the majority of cases terminated by crisis after a few injections. Kinsella [7] has shown that in septic endocarditis the blood becomes sterile for twenty-four hours after the febrile reaction, and then the micro-organisms again appear. I have tried this method of treatment in several cases of septic endocarditis, but without either permanent or temporary benefit. At present it can be said only that there is some suggestive, but no convincing evidence that certain forms of sepsis may be benefited by this treatment. Further carefully controlled observations should decide this question.

Pneumonia of the pneumococcus and influenzal types has received considerable attention, and the results obtained merit consideration. Favorable results have been reported by Wells,[8] Roberts and Cary,[9] Cowie and Beaven,[10] and others. Cowie's series includes only nine cases, all influenzal pneumonia. Two of these patients had a crisis the first day; one the second day, and one the third day following the injection. The other five cases ran the usual course. Cowie believes that the crisis in the four cases was at least in part due to the treatment. Wells treated eleven cases of influenzal pneumonia. In three of these there was a crisis following a single injection, with no subsequent rise in temperature. Roberts and Cary report a series of eighty-three cases of influenzal pneumonia treated by intravenous vaccine, with a mortality of 11.3 per cent. In sixty-seven satisfactory controls the mortality was 31 per cent.

I have used typhoid vaccine in selected cases of pneumonia during the last four years. There is little doubt that in a limited number of cases termination by crisis or rapid lysis has followed a single treatment. More frequently, however, the patient is only temporarily detoxicated, the disappearance of pleural pain and decreased temperature with return of the pulse and respiration to normal continuing for only a few hours, when the previous symptoms again recur.

The question must be raised whether the beneficial action of specific pneumococcus serum may not, in part at least, be due to nonspecific elements. This is a field in which further carefully controlled observations will be awaited with interest.

It has been reported by Baldwin and L'Esperance that guinea-pigs inoculated with tubercle bacilli and then given a dose of typhoid vaccine outlive the controls. This method of treatment has been used in pulmonary and bone tuberculosis in man. None of the reports consulted, however, present convincing evidence. Its application to this class of patients should be carried out only when the results can be carefully recorded, and then only in conjunction with and never to replace other recognized methods of treatment.

The literature contains a number of reports on the beneficial results of this method of treatment in syphilitic iritis. It has been used in secondary syphilis, but the results are not conclusive.[11] I have observed a gumma on the leg disappear promptly after a few intravenous injections of typhoid vaccine, but the Wassermann test was still unmodified after the vaccine had been given every third day for one month. With other

1. Ichikawa: Abortive Treatment of Typhoid and Paratyphoid, Sei-i-Kwai M. J. **33**: 73, 1913.
2. Kraus and Mazza: Zur Frage der Vaccinetherapie des Typhus abdominalis, München med. Wchnschr. **61**: 1967, 1919.
3. Gay, F. P.: Abortive Treatment of Typhoid by Sensitized Typhoid Vaccine Sediment, J. A. M. A. **65**: 322 (July 24) 1915.
4. Holler, G.: Beiträge zur Klinik der Infections-Krankheiten, **6**: 92, 1917.
5. Tagle, Prado: Rev. méd. de Chile, August, 1919; abstr. J. Trop. Med. **22**: 22 (Jan. 15) 1920.
6. Wilmette, R. G.: Injections intraveineuses de métaux colloidaux traitement de l'infection puerpérale, J. méd. de Paris **38**: 117, 1916.
7. Kinsella, R. A.: Bacteriologic Studies in Subacute Streptococcus Endocarditis, Arch. Int. Med. **19**: 367 (March) 1917.
8. Wells, C. W.: Intravenous Injection of Foreign Protein in Influenzal Pneumonia, J. A. M. A. **72**: 1813 (June 21) 1919.
9. Roberts, Dudley, and Cary, E. G.: Bacterial Protein Injections in Influenzal Pneumonia, J. A. M. A. **72**: 922 (March 29) 1919.
10. Cowie, D. M., and Beaven, P. W.: Nonspecific Protein Therapy in Influenzal Pneumonia, J. A. M. A. **72**: 1117 (April 19) 1919.
11. Biach, A.: Wien. klin. Wchnschr., 1915, No. 49.

well recognized methods of treatment available there is no place for foreign proteins in the treatment of syphilis.

Many favorable reports are available on the good results in rheumatic iritis (Muller and Thanner [12]). In eleven cases of rheumatic iritis the photophobia and pain disappeared within twenty-four hours. Muller and Thanner also report marked benefit in nine cases of opacity of the cornea with or without choroiditis. Friedlander [13] reported forty-two cases of trachoma treated by this method with most satisfactory results. Apparently the reports on iritis and trachoma warrant further application of this method of treatment.

Of especial interest are certain reported results obtained with normal serum, which brings into question the specificity of certain immune serums. Most striking are observations made by Kraus and Penna [14] in the treatment of anthrax in man with normal beef serum given either subcutaneously or intravenously in dose of from 30 to 50 c.c. They report 146 cases so treated with one death, results better than have been reported from the use of immune serum.

Bingel [15] has recently created considerable discussion in Germany by reporting a series of 466 cases of diphtheria treated with normal serum in which he claims that the results were as satisfactory as in 471 controls receiving antitoxin serum. His paper has called forth a number of reports both laboratory and clinical. The clinical reports fail to support his claim, although suggesting some benefit derived from the nomal serums. The laboratory experiments, however, show that at least certain normal serums possess considerable antitoxic properties. Meyer [16] reports 33⅓ per cent. of guinea-pigs saved after receiving a lethal dose of diphtheria bacilli, as compared with 100 per cent. saved after antitoxic serum. Kastenmeyer [17] states that three animals receiving 100 times the fatal dose of diphtheria toxin were saved with normal serum. This is a problem for laboratory study. Meanwhile, no physician would care to assume the responsibility of administering a foreign protein in diphtheria in lieu of antitoxic serum.

Is foreign protein therapy attended with danger? Experience has shown that when the dosage is carefully determined, i. e., just a sufficient amount to excite a chill, it is practically free from danger. We have given at Cook County Hospital at least 2,000 intravenous injections of typhoid vaccine in the treatment of various acute infections without serious consequences. The only untoward results observed have been the development of delirium tremens in confirmed alcoholics. However, the treatment was not administered to enfeebled individuals or those with disturbed heart action. Whether there is an advantage in the use of a larger dose of protein than that necessary to excite a chill is undetermined. The use of such large doses probably increases the danger attendant on the treatment.

12. Muller and Thanner: Ueber parenterale Eiweiss-Injection, Med. Klin. **12**: 171, 1916.
13. Friedlander, W.: Therapeutische Erfahrungen bei parenteralet Injection von Proteinkoerpern in der Augenheilkunde, Wien. klin. Wchnschr. **29**: 132, 1916.
14. Kraus, R.; Penna, J., and Bonorino Cuenca, J.: Rev. méd. de Chile **47**: 333 (July) 1919; abstr. J. A. M. A. **73**: 1318 (Oct. 25) 1919.
15. Bingel, A.: Ueber Behandlung der Diphtherie mit gewöhnlichem Pferdeserum, Deutsch. Arch. f. klin. Med. **125**: 284, 1918.
16. Meyer, S.: Experimentelle Untersuchungen über den Einfluss normalen Pferdeserums und die Infection der Meerschweinchen mit lebenden Diphtheriebazillen, München med. Wchnschr. **66**: 873, 1919.
17. Kastenmeyer, B.: Ueber den Einfluss normalen antitoxinfreien Pferdeserum auf experimentell erzeugte Diphtherie, Deutsch. med. Wchnschr. **45**: 1338, 1919.

The permanent value of this method of treatment is still to be determined. The immediate disappearance of all evidence of infection in a certain rather small percentage of cases following protein therapy is established, and this should serve as a stimulus to future well controlled investigation.

XVIII. NONSPECIFIC PROTEIN THERAPY IN ARTHRITIS

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It cannot be questioned that very remarkable beneficial effects have followed the intravenous injection of foreign protein in the arthritides. There is seldom a case of acute arthritis or periarthritis which does not respond to a certain degree, but this improvement is often of only a few hours' duration. Taking cases at random, including all varieties, there will be found a large percentage in which no permanent beneficial effect can be secured by this method of treatment. One should not expect permanent beneficial effects in cases of periarthritis of a less chronic nature, unless great care has been taken to rid the body of all foci of infection that can possibly be found. Accordingly, therapeutic intravenous injections of foreign protein should follow failure to secure successful results by the removal of such foci of infection, or they should be used in conjunction with an attempt to remove the focus.

Unquestioned relief from pain will often follow protein therapy, even though the focus of infection is not removed and, in some cases, in addition to improvement in the joint condition, the focus itself may cease to be active.

So far as we know at present, foreign protein acts by combating infection. If we regard, as many clinicians do, the large majority of joint diseases as due to infection and only comparatively few as due to metabolic disturbances, it may be said that foreign protein therapy is not contraindicated in any form of this large group, provided no other forbidding features, such as serious heart disease, are present. It may be argued that, while we may not cure the structural defects or the consequences of the defects, such as muscle atrophy and ankylosis, we may stop the exciting cause and thus arrest the process from further development. But, as a matter of fact, we have not enough trustworthy data at hand to prove that this is so, plausible as it may seem.

Thus far, experience has taught us that acute or subacute processes that have not progressed beyond the first year are the ones that give the best results, particularly those that have not gone on to marked structural change of the articular or periarticular tissue; next to these, cases which have progressed longer and which may show structural change, but which have not produced definite ankylosis and its consequential results.

I believe that the work that has been done justifies the statements that acute and subacute arthritis and periarthritis are the forms which respond more promptly and more surely to this method of treatment. A few cases of chronic arthritis of as long as three years' standing have been recorded in which, apparently, complete cure has followed this method of treatment; and in still more chronic forms, unquestioned benefit has occasionally resulted. However, at present

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there are not enough properly classified cases recorded to enable us to say what percentage of each class is benefited by this method of treatment.

FREQUENCY OF INJECTION

It seems to have been shown that no negative phase, so far as the antibody content of the blood is concerned, follows the injection of foreign protein. For this reason we may feel justified in giving daily injections. On the other hand, if we take into consideration the severity of the reaction and the condition of the patient, it is good practice to let a day intervene between the injections. If any benefit is to be secured by this method of treatment, from one to ten injections will suffice. No anaphylactic shock phenomena accompany these injections, even though a second course of treatment may be instituted after several months.

CHOICE OF FOREIGN PROTEIN

It has been shown that sterile albumose solutions,[1] horse serum and bacterial proteins bring about similar results At present, bacterial protein seems the protein of choice. Typhoid vaccine is most generally used. A typhoid vaccine can be made up according to well known rules and preserved in 0.5 per cent. phenol, or a standard stock vaccine may be used.

The severity of the reaction is in a measure proportional to the size of the dose. There is a general impression that the maximum benefit will be derived from a dose just sufficient to give rise to a chill.

CONTRAINDICATIONS

Uncompensated cardiac lesions, acute endocarditis or pericarditis should be considered as contraindications. A word of caution may not be out of place. It should be distinctly borne in mind that we are far from an explanation of the manner in which the foreign protein acts, and that only a certain percentage of any form of joint infection is improved. For this reason, we must approach a given case with definite conservatism.

XIX. INTRAVENOUS PROTEIN INJECTIONS IN UROLOGY AND DERMATOLOGY

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CHICAGO

Since 1913, when Bruck and Sommer [1] used intravenous injections of killed gonococci in the treatment of complications of gonorrhea, there has accumulated a considerable literature on the subject. They used special care in securing highly polyvalent gonococcal vaccines, and by so doing believed they were able to influence all such gonococcal infections specifically; this idea and method of treatment, though not generally adopted, had many adherents for three years.

Toward the end of this period, the nonspecific factors in the treatment of infections were being recognized. Müller and Weiss,[2] by the intragluteal injection of milk, secured results in gonorrheal complications that compared favorably with those of Bruck and Sommer, while Miller and Lusk [3] secured encouraging results in gonorrheal arthritis by the use of intravenous typhoid vaccine. In their series were four instances of acute gonorrheal arthritis, all of which received less benefit by this treatment than acute cases of other origin, although slow improvement was noted; one subacute gonococcal arthritis, and four of the five cases of chronic gonococcal arthritis were cured.

It has since been established [4] that gonococci, meningococci, colon bacilli and proteose preparations intravenously administered, all produce equally good results in gonococcal arthritis and epididymitis. In my first series of twenty-four patients with gonococcal arthritis, complete recovery or marked rapid improvement was observed in all but two instances. Eleven patients were treated with gonococci with one failure, and eleven patients with meningococci with one failure, while but two were treated with colon bacilli, and both recovered. In the epididymitis series were twelve patients, and all were apparently completely and permanently cured within a week, there being no difference in results produced with the gonococcus, meningococcus and colon bacillus.

Many clinicians familiar with the therapeutic results of this method are convinced that the improvement or cure of the infection depends, in great measure, on the intensity of the reaction and on the processes associated therewith. Since any bacterial suspension is capable of producing the reaction, the readily accessible typhoid vaccine is frequently used for that purpose. On the other hand, I have used gonococcal protein almost exclusively, not that it is believed to have any greater curative value, but because its reaction characteristics have been more carefully studied.

Cecil [5] noted little improvement after intravenous proteins in seven patients with gonorrheal arthritis. Two of these patients received typhoid and five gonococci; and while all showed slow improvement while in the bospital, there is doubt in this author's mind as to the permanent benefit secured in gonorrheal arthritis by injections of protein intravenously. There are, without doubt, certain refractory instances of gonococcal joint infection, especially the severe acute cases; but even here I believe the incidence is not high. The best results are now being obtained by the simultaneous treating of the primary focus together with the intravenous protein injections.

In one military cantonment where intravenous injections of gonococcal protein were used in gonococcal epididymitis, the results were most gratifying. The cessation of pain was nearly always complete within twenty-four hours after a properly reacting protein injection, and the average stay in the hospital was from five to six days, at the end of which time there was usually a marked reduction of the local swelling, which reduction started with the subsidence of the pain. In some instances of gonorrheal epididymitis it is necessary to give a second injection to obtain the desired results. There are two distinct groups of such individuals: One apparently derives no subjective or objective benefit from the first injection, but may respond nicely to the second injection from twenty-four to forty-eight hours later; the other group obtains relief after the first injection, but it is only temporary. These patients also sometimes obtain complete and permanent relief after a second injection. If benefit is not secured in these cases after a second injection, it is not best to continue with this treatment.

1. Merck's albumose, 4 per cent. solution, from 1 to 2 c.c.
1. Bruck and Sommer: München med. Wchnschr. **60**: 1185, 1913.
2. Müller and Weiss: Wien. klin. Wchnschr. **29**: 249, 1916.
3. Miller, J. L., and Lusk, F. B.: The Use of Foreign Protein in the Treatment of Arthritis, J. A. M. A. **68**: 2010 (Dec. 30) 1916.
4. Culver, Harry: The Treatment of Gonorrheal Infections, J. A. M. A. **68**: 362 (Feb. 3) 1917.
5. Cecil, R. L.: A Report of Forty Cases of Acute Arthritis Treated by the Intravenous Injection of Foreign Protein, Arch. Int. Med. **20**: 951 (Dec.) 1917.

The primary infection, as the urethritis, prostatitis and seminal vesiculitis, while still present after this cure of the epididymitis, responds more readily, in most instances, to local treatment than other similar infections not so treated.

As this method was introduced with the opening of the aforementioned military camp, it was not found necessary to perform epididymotomy in a single instance of gonorrheal epididymitis, a most unique record for a military post where epididymitis is relatively common.

Very little, if any, effect is noted in orchitis of mumps or in nonspecific epididymitis after intravenous injections of protein, a fact that may prove to be of some diagnostic value.

In dermatologic practice, encouraging results have been noted in certain chronic skin lesions by the use of the protein reaction. Engmann and McGarry [6] obtained satisfactory results by the intravenous injection of typhoid bacilli in one case of psoriasis; marked improvement in six instances of lupus erythematosus, in one of exfoliative dermatitis, and in one of parapsoriasis; and slight improvement in one instance of dermatitis herpetiformis. A case of Darier's disease was made worse with the appearance of new lesions.

Scully [7] has reported success in the treatment of psoriasis by combining intravenous typhoid injections with proper local treatment. Eight cases of chronic psoriasis were thus treated, and following the first or second injections the lesions became less inflammatory and less indurated, although there was no retrogression in the extent of the lesions and no new lesions appeared. When this was followed by the application of chrysarobin, the lesions entirely disappeared in from eight to sixteen days.

In studying the reaction following the injection of various bacterial suspensions in gonorrheal patients, I used, as controls, nongonorrheal patients suffering from chronic skin lesions, as psoriasis, chronic eczema and recurrent pyogenic infections of the skin. Apparent temporary cures were obtained in three cases of psoriasis and two of chronic eczema, while permanent recovery was obtained in three instances of chronic pyogenic skin infection. Although all cases of chronic eczema and psoriasis had recurrences, the lesions were of a much milder type.

There have been no recent reports either to condemn or to sustain this method of treatment in chronic skin diseases. It would seem to be worthy of a trial in certain instances.

7 West Madison Street.

XX. THE NONSPECIFIC REACTION *

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During the course of the last six years a method of therapy has been developed that seems of interest not primarily because of the clinical results achieved, but rather because this method of therapy promises to exert a far-reaching influence on medical thought and theory concerning the factors that are active in recovery from disease. Since the general profession is still to some extent unfamiliar with the clinical results and the experimental work in this particular field, it may be permissible to discuss briefly two misapprehensions that are commonly current in regard to nonspecific therapy: the first, that it represents a new and heretofore unknown and unused method of treatment; the second, that, immunologically illogical, it is purely empiric in character.

As a matter of fact, this form of therapy, call it as we will—nonspecific therapy, protein therapy, ergotropie, omnicellular plasma-activation or heterotherapy—formed in all probability the basis of the very earliest and most primitive methods of practice that we encounter historically. In one form or another—the cautery, counterirritation or the fontanel—it held sway for long periods of time. Under a variety of more modern terms we meet it again and again in recent practice—autoserotherapy, tuberculin injection, nuclein injection, etc. That the method in its general form runs counter to the current conception of immunity is perhaps true, but by no means justifies the conclusion that the method is therefore illogical or purely empiric in character.

At first glance, after thirty years or more of satisfactory effort to perfect specific therapy it might, indeed, seem illogical or even a step backward to study nonspecific methods of therapy; but if we analyze the subject for a moment we will see that this is by no means true. Let us consider inflammation. We find this reaction fundamentally similar, no matter what the cause of the injury, whether it is bacterial, toxic, chemical or traumatic. While there may be minor differences in the amount or the composition of the exudate, in the degree of the vascular alteration or the type of cellular reaction, the fundamental alterations are always alike. We deal with the effort of the organism to dilute the noxious agent, to neutralize it, to remove it by extracellular or intracellular digestion, and, that failing, to wall it off, to put it outside the current of organ activity. If, now, we seek to alter this process therapeutically, we have two means of approach: The one is interested solely in the cause of the inflammatory reaction: if a bacterium, to produce a bactericidal substance; if a toxin, to produce an antitoxin; if a chemical, to neutralize the chemical agent. We see at once that so far as the causes of inflammation and of tissue injury may be unlimited, our specific agents will have to be unlimited. Our only other possibility will lie in the endeavor to alter the reaction of the body, that is, to alter the inflammatory reaction—accelerating or retarding it as may be desirable—rather than trying to alter the agent that has caused the injury. It is at once apparent that we must deal with substances that have a general effect on cellular activity, with nonspecific rather than with specific substances. And from this point of view we are finding that a long list of therapeutic agents, some of which have been in use for many years, have in all probability a common and pharmacologically a simple mode of effect.

These agents include a great many organic (biologic) substances as well as chemicals and drugs; a complete list is not essential for the present purpose. Thus we find that bacterial vaccines came first into prominence for nonspecific use—typhoid vaccine, colon vaccine or staphylococcus vaccine in the treatment of arthritis, acute infectious diseases of all kinds, venereal diseases and their complications. Then followed protein split products—proteoses, bee toxin, pollen toxin, etc., milk injections (intramuscularly) and extracts from tissues. Then came the recognition that older ther-

6. Engmann, M. F., and McGarry, R. A.: The Treatment of Certain Diseases of the Skin, J. A. M. A. 67: 1741 (Dec. 9) 1916.
7. Scully, F. J.: The Reaction After Intravenous Injections of Foreign Proteins, J. A. M. A. 69: 1684 (July 7) 1917.

* From the Department of Pathology, University of Illinois, College of Medicine.

apeutic agents belonged to the same category—serums, nuclein injections, the use of yeast, tuberculin, Beard's use of trypsin in carcinomas, or the use of Coley's fluid in sarcoma. To these a large number of drugs have been added which seem therapeutically active (iodids, formaldehyd, etc.) in a similar nonspecific way. Even hypertonic and hypotonic salt solution and distilled water may be used to induce a reaction when injected intravenously. More recently the intramuscular injection of minute amounts of turpentine has been introduced for treatment when a long continued effect is desired. The reaction these agents induce in the organism finds expression in various ways that range from severe shock effects to mere transient alterations in leukocyte count. Following the more powerful and active ones there is usually a severe chill, sweating, a febrile rise of 4 or 5 degrees Fahrenheit, a leukopenia followed by a leukocytosis, occasionally gastro-intestinal hypermotility, lowering of the blood pressure, and a number of changes in the serum, such as increase in fibrinogen, enzymes, thrombokinase, blood sugar or antibodies. A general increase in malaise usually goes over into a pronounced euphoria. With the less active substances, as milk, colloidal metals, serum or nucleins, the effect may be manifest in some temperature rise, a slight chill or feeling of malaise, or a leukocytosis of a few thousand over that observed before the injection.

On local inflammatory processes the injections are followed by distinct focal effects, first apparent as an intensification of the inflammatory reaction, later followed by a diminution until the preinjection stage is again reached or surpassed. All inflammatory processes present in the organism, whether acute, chronic or latent, respond to the injections in this manner.

How can such injections bring about an abortive cure of an acute infection, such as typhoid fever, or terminate an acute arthritis or an iritis or any of the other inflammatory processes in which nonspecific therapy has been successfully used at times?

We have to consider a number of theories that have been suggested. Weichardt [1] regards the therapeutic effect in the nature of a plasma-activation. This idea emphasizes the fact that with the injection the organism is stimulated, and that the resulting reaction represents a summation of all the forces of resistance with which it is equipped. The leukocytes become more active, their number is increased by the stimulation of production in the bone marrow, antibodies heretofore fixed to the cell are shed (the exfoliative stimulation that Larson has suggested), enzymes are mobilized, glands of internal secretion are stimulated. Naturally, such a conception involves the recognition that when once the organism is fatigued beyond the point of reaction no amount of injections or nonspecific therapy will avail. This coincides with the general clinical experience that nonspecific therapy, if it is to be used successfully, must be used early in disease.

Apart from this active phase of increased resistance which brings into play definitely dynamic but previously latent powers, there is to be observed a second method of defense that finds its expression in an increased tolerance to intoxication. This condition is closely associated with the state that has been observed after anaphylactic shock—antianaphylaxis, or desensitization, as one may wish to term it. Starkenstein [2] has carried out a series of experiments in which he has determined that after nonspecific injections of various kinds—milk, proteoses as well as calcium chlorid, cinchophen (atophan), etc.—the organism becomes more resistant to a variety of poisons, such as strychnin, phenol and protein split products. Von den Velden,[3] Luithlen [4] and Starkenstein [2] have all observed the decided alterations that take place in the permeability of the capillaries after nonspecific injections. These studies have justified the conclusion that the various agents injected are all followed by marked changes in the permeability of the cell membranes, and that it is this fundamental change that is probably at the basis of the therapeutic effect observed in nonspecific therapy. At first the cell membrane seems more permeable. This corresponds with the fact that there is an increase in the lymph flow, the irritability of the nerve cell is increased, and that there is a freer exchange between blood plasma and cell content, that is, sensitized cells give up their antibodies, enzymes are mobilized, thrombokinase and fibrinogen increased, and the sugar level altered. This period of increased cellular permeability corresponds with the clinical period of increased general malaise and the increase of the inflammatory reaction at local foci. This phase is followed by one of diminished permeability. It is in this stage that we find the cellular resistance to intoxication increased, the threshhold for nerve stimuli raised and evidences of intoxication and inflammation subsiding while the patient experiences euphoria.

Clinically and experimentally the nonspecific reaction is a diphasic reaction. The first phase (negative) associated clinically with an intensification of disease manifestations, the second phase (positive) associated with clinical improvement, with reconstruction, with general euphoria. It seems probable from clinical observation that the second, or positive, phase is in a measure a function of the negative in that within certain limits the greater the irritation, the greater the tendency to complete restitution to the normal when the balance once swings in that direction. And it is equally apparent that in dealing with such a reaction the physician must keep in mind that he may at times do decided harm instead of good. If a patient is given too large a dose (particularly of such toxic substances as typhoid vaccine or colon vaccine), or injected when no longer capable of reacting to stimulation, or if a latent inflammatory focus is activated, the fault will lie in the judgment of the physician and not with the fundamental principle that underlies the method.

Nonspecific therapy is a new method of therapy so far as it represents the clear-cut recognition that certain clinical results heretofore obtained in a variety of ways and by a number of different substances were in reality due to a similar biologic alteration on the part of the organism. Some of the results that we had previously accepted on the basis of specificity we now know to have been due to this nonspecific effect. In differentiating between the specific and the nonspecific phases of resistance and in developing them in an unbiased manner, very definite therapeutic advances seem possible. But it must be kept in mind that nonspecific therapy is still to some extent in an experimental stage and that we are not yet fully competent to judge the ultimate range of its usefulness.

NOTE.—This instalment closes the series of articles dealing with serums, vaccines and nonspecific therapy. These papers are reprinted in pamphlet form at twenty-five cents per copy

1. Weichardt, W.: München. med. Wchnschr. **65**: 581, 1918; **67**: 91, 1920.
2. Starkenstein, E.: München. med. Wchnschr. **66**: 205, 1919.
3. Von den Velden, R.: Berl. klin. Wchnschr. **56**: 481, 1919.
4. Luithlen, F.: Wien. klin. Wchnschr. **26**: 653, 1836, 1913.

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SATURDAY, JANUARY 29, 1921

THE CAUSE OF CANCER

To any one who is familiar with the long years of research in the domain of the etiology of neoplasms and who is conversant with the literally enormous literature to which the subject has given rise, the headline of these comments will not awaken any undue enthusiasm. The fundamental problem of the cause of cancer, a theme of undisputed medical importance, has not yet been solved, nor is the "facile triumph" in sight. One may measure the gradual gains of knowledge on this subject in the course of years; but there is great danger that the innumerable failures and disappointments encountered in cancer research thus far may overbalance the successes to the extent of discouraging the continuance of the attack on the unknown with renewed vigor and persistence.

There are many significant, though seemingly isolated facts about cancer. Its ubiquitous occurrence is admitted; its possible relation to tissue injuries and irritations has often been indicated; its problematic association with a sort of senescence of cells has been discussed. There are indications that a variety of chemical substances may either stimulate or check growth, as well as regulate it; yet, as Wells [1] has lately pointed out, our biologic chemistry has not yet given us any very substantial facts on these problems. So, likewise, the microbiology of the subject and the search for a cancer parasite are largely dominated by analogies from other fields of observation.

Every worker who has persisted year after year in the attack on the cancer problem deserves a hearing. His experience and conclusions are likely to help dispel illusions, even if nothing positive is added to our knowledge. Hence we may well listen to the tentative convictions of Paine,[2] who has long been engaged in investigations at the Cancer Hospital Research Institute in London. He points out that the clinical features of cancer in man are distinctive and strikingly unlike those of the inflammatory disorders of infective origin, for it is neither contagious nor infectious in the ordinary sense of the terms, nor does it show seasonal prevalence. Pointing out how often cancer arises under circumstances closely associated with the process of inflammation, the response of the tissues to injury which may be either physical or chemical, Paine feels justified in emphasizing the significance of this relationship. He believes that he has observed all stages and sequences from chronic inflammation of the breast, for example, to malignant mammary cancer. The process begins with inflammation and ends in malignant degeneration. Through the degeneration of the "nobler parts of the cell" whereby its function has been impaired, food brought to it is no longer used in the normal manner. A surplus may accumulate and may perhaps be "equilibrated by growth." In other words, the damaged cell, physiologically altered in its metabolism, starts to grow when its former specialized function is lost. "Nothing to do but grow" might paraphrase the behavior tendency of the damaged cells. The disturbance in cell metabolism may, of course, be due to toxins of micro-organisms as well as to other noxious agents; but, in the words of Paine, the result of the damage is to disturb the balance of metabolism by impairing the special functions of the cell, and thereby causing persistent overgrowth. As the *Lancet* [3] has pointed out, Paine's conclusions are based on observed variations in the morphology of cells which many persons may be unwilling to accept as conclusive; nevertheless, the deductions are entitled to a careful hearing.

1. Wells, H. G.: Chemical Pathology, Ed. 4, Philadelphia, W. B. Saunders Company, 1920, p. 499.
2. Paine, Alexander: The Origin of Cancer, Lancet **2**: 693 (Oct. 2) 1920.

ARTIFICIAL IMMUNIZATION AGAINST TUBERCULOSIS

Calmette and Guérin have recently reported striking results on acquired immunity to tuberculosis in cattle, produced by vaccination with tubercle bacilli of the bovine type reduced in virulence by prolonged cultivation in mediums containing bile. A number of papers on this subject by these authors [4] appeared some years ago in which they stated that guinea-pigs, monkeys and cattle could tolerate large doses of tubercle bacilli attenuated by this method without acquiring generalized disease, at the same time developing a pronounced immunity to subsequent virulent infection by the intravenous route. In the series just reported,[5] vaccinated cattle, together with a number of nonvaccinated controls, were exposed to severe "natural" conditions. Ten heifers were tied behind cattle suffering from advanced tuberculosis under such conditions that their food was constantly contaminated by the droppings of the tuberculous cattle. Six of the ten were vaccinated at the outset by injection of 20 mg. of live tubercle bacilli of the bovine type which had been cultivated twelve years through seventy transfers on glycerolated potato treated with bile. The other four served as controls. One of the six animals was

3. The Cause of Cancer, editorial, Lancet **2**: 705 (Oct. 2) 1920
4. Calmette and Guérin: Ann. de l'Inst. Pasteur, 1911.
5. Calmette and Guérin: Ann. de l'Inst. Pasteur **34**: 553, 1920.

reinoculated after one year, and two others at the end of both the first and second year. All the controls except one developed tuberculosis, as shown by tuberculin test and necropsy. Of the vaccinated animals, the three that had received only one inoculation showed infection after two years. The others remained completely free from tuberculosis through the experiment. The authors believe that their method of vaccination conferred an immunity of eighteen months' duration to the most intense exposure.

This paper brings up a number of interesting points. The first is obvious: the immeasurable value of a method that would prevent the tremendous annual loss in cattle showing a positive tuberculin test. Results on ten heifers are insufficient to clinch a matter of such gigantic importance, as the authors themselves admit. But a new way has been pointed out, which must attract the attention of veterinarians and experiment stations the world over. Beyond question, the start will be followed by much empiric experimentation.

The theory of vaccination by attenuated organisms is of especial interest. The idea of deliberate attenuation is, of course, as old as Pasteur; and, so far as tuberculosis itself is concerned, observations on resistance to second infection go back to Robert Koch, who noted the difficulty or impossibility of obtaining skin infection on inoculation of virulent organisms into an animal already tuberculous. Among the notable contributions on tuberculosis immunology were Behring's vaccination of cattle with tubercle bacilli of the human type, to which cattle are relatively resistant, and Römer's similar treatment of sheep. Friedmann, by methods that savored strongly of quackery, in a spectacular manner and under claims that were wholly unwarranted by the results he was obtaining, undertook to accomplish a very different thing, the cure, rather than the prevention of the disease. This he did by attempting to heighten immunity through the introduction of a supposed tubercle bacillus, namely, one from a turtle, that, biologically considered, was vastly farther removed from the human bacillus than either the bovine or avian type. A series of investigators at Saranac Lake, including Trudeau, Nichols, Paterson and Soper, were successful in producing an artificial immunity even in the highly susceptible guinea-pig, by infection with a strain of bacilli of the human type which had spontaneously lost its virulence, and in rabbits by inoculation with the human bacillus, to which the rabbit is characteristically resistant, immunity in this case being conferred against the highly virulent bovine organism. The idea of deliberate attenuation by chemical means is by no means new; numerous attempts have been made to reduce virulence of tubercle bacilli by soap, glycerol and other substances, but the use of such organisms has failed to produce immunity.

Calmette and Guérin feel that they have found a method of controlling the virulence of tubercle bacilli, a belief that can be received only with caution by pathologists. The subject has much underlying complexity. Will an attenuated organism "stay put" when introduced into the animal organism? Certainly the spontaneously attenuated human strain isolated by Trudeau thirty years ago and considered virtually avirulent for the last twenty-five, occasionally attacks a guinea-pig with considerable force, and numerous other similar cases are described.

Why is bile effective in reducing virulence? The ability of bile to restrain other organisms in the cultivation of the typhoid bacillus and to dissolve the capsules of pneumococci is well known. Probably many conditions that make growth difficult, when prolonged, lower virulence. A specific factor is perhaps introduced in the use of bile. Bile salts have the property of dissolving or at least holding in colloidal suspension lipoids like cholesterol. A high percentage of the weight of the tubercle bacillus is in the form of an alcohol chemically and physically somewhat similar to cholesterol. The great resistance of the tubercle bacillus to corporeal lysis is thought to be in large measure due to this substance. Bile may rob the bacillus of some of its armor. Chemical studies of bile-attenuated bacilli would check on this.

At any rate, the investigation is unquestionably pointed in the right direction. There is abundant evidence for the dictum of Krause that infection is a sine qua non of immunity in tuberculosis: "No resistance without tubercle." The injection of dead tubercle bacilli and their products long ago proved valueless. Injection of small doses of virulent bacilli has more than once proved dangerous. Injection of attenuated organisms is the logical alternative. Artificial immunity has unquestionably been thus conferred in animals. The chemical reduction of virulence and its maintenance at a low level thus become of immeasurable importance. The problem consists in so modifying a bacillus that it will cause the minimal amount of morphologic tubercle capable of stimulating resistance.

FOREIGN PROTEIN THERAPY

The intravenous injection of bacterial vaccines, proteoses or certain solutions, such as hypertonic or hypotonic salt solutions, elicits a response in the animal body characterized by chill, sweating, fever, leukopenia followed by leukocytosis, and other changes in the blood demonstrable by appropriate methods. These effects are observable in the healthy as well as in those suffering from disease. When these symptoms are produced in infections associated with localized lesions, such as arthritis, the local lesion is temporarily made worse and then frequently improves so that in the following days the tissues involved may approach normal, at least for a time. In certain febrile states a critical drop in temperature results which, in some instances, has been permanent.

It is essential to distinguish between the scientific investigation of the little understood phenomenon of protein shock—which may have an important bearing on our future conceptions of immunity and the mechanism of recovery from disease—and the propriety of at once introducing the procedure as an accepted method of treatment of the sick. As Petersen [1] points out, the subject of foreign protein therapy is by no means new, although it now appears under a new name. Nuclein injections, Coley's fluid in sarcoma, trypsin injections in carcinoma, and other similar procedures produced reactions similar to those observable after intravenous injections of proteins. Various theories, including the activation of leukocytes, the stimulation of antibody formation, the mobilization of enzymes or the increase in permeability of cell membranes, have been advanced to explain the reaction, but thus far no satisfying explanation has been established.

The lack of a scientific explanation of the effects produced by the injection of foreign protein, however, has not deterred its widespread employment in the treatment of disease, and reports have been made of the results of its use in almost all infectious diseases. These reports have been sometimes favorable, sometimes unfavorable; but, as Miller says [2] in his survey of clinical results, "In those diseases in which the best results have been obtained, only a certain percentage of cases can be said to be cured or even improved." Later in discussing typhoid fever he says, "Further clinical observations are necessary before it can be definitely determined that this method of treatment should be generally adopted." And concerning the use of foreign protein injections in sepsis, "At present it can be said only that there is some suggestive but no convincing evidence that certain forms of sepsis may be benefited by this treatment."

It is thus evident that while striking clinical changes, sometimes to the apparent profit of the patient—but sometimes decidedly otherwise—may follow the injection of foreign proteins, favorable results cannot be expected to occur regularly. It is generally agreed that the method still lacks the requisite amount of carefully controlled observations which would entitle it to acceptance as an approved procedure for general use. However, any procedure which offers even a limited possibility of usefulness either for laboratory investigation or therapy deserves a hearing. For this reason the Council on Pharmacy and Chemistry arranged for the series of articles appearing in this issue of THE JOURNAL [3] to summarize what has been learned in the treatment of disease by nonspecific methods. A careful reading will convince the reader of the incompleteness of our knowledge. It should, indeed, leave him in doubt as to the propriety of using foreign proteins in infectious disease, except under experimental conditions, until it can be shown that their effects are more than temporary, and that their use is unattended by injury, either immediate or remote, to the patient.

Considering the subject in all its aspects, most serious of all is the attempt of commercial pharmaceutical houses, to push the use of alleged specific methods of treatment, which, the thinking physician will at once realize, are actually methods of inducing protein shock. Research with such products in laboratories and hospitals under suitable control is a far different matter from indiscriminate use in general practice.

1. Petersen, W. F.: The Nonspecific Reaction, this issue, p. 312.
2. Miller, J. L.: Foreign Protein Therapy in the Acute Infections, this issue, p. 308.
3. Biologic Therapy, special articles, this issue, p. 308.

Current Comment

IN AN AGE OF SPECIALIZATION

Huxley once said that what people call applied science is nothing but the application of pure science to a particular class of problems. This statement will bear frequent reiteration at a time when many students of medicine are seeking some short cut to the post of "expert" or "specialist" in a branch of the healing art. The history of science and of medicine shows many instances of the far reaching importance of pure science in giving the impulse to developments that have opened up new fields of diagnosis or practice. We are at present in danger in many cases of too great haste toward the practical goal of so-called expert knowledge, overlooking the long path of fundamental training that ought to be traversed by those who desire to apply themselves to highly specialized pursuits. Lord Moulton has remarked, in emphasizing the importance of the fundamental sciences and experimental research for the problems of the industrial arts, that nowadays the game has to be stalked from long distances and often by circuitous routes. It is no longer possible to walk directly up to it. The same allusion may be made in the domain of medicine. Occasionally, new specialties may arise by chance discoveries. As Cushing [1] has pointed out in a recent lecture, the diseases incidental to a novel occupation like aviation; the introduction into the clinic of a new discovery like Wassermann's reaction, or Roentgen's ray; a new instrument of precision like the calorimeter—such things as these will make a succession for all time of unlooked for opportunities for us and our followers in medicine to engage in new endeavors under novel conditions. For the most part, however, one can rarely be better informed or more skilful in some special field without the willingness, consciously or unconsciously, to build upon the foundation of fundamentally stable, tested scientific fact. Short cuts, Cushing truly warns, to specialization, without thorough preparation in the fundamentals, make incompetent if not dangerous practitioners, and so long as this is permitted within the profession itself we should be less intolerant of those who have smuggled themselves into the tree with no medical preparation whatsoever—the osteopath perched insecurely on a limb propped by massage, and the Christian scientist

1. Cushing, Harvey: The Special Field of Neurological Surgery After Another Interval, Arch. Neurol. & Psychiat. 4: 603 (Dec.) 1920.

tip-toe on another feebly supported by psychotherapy. Medicine is daily coming into danger of being mired in a mess of disconnected specialties. At a time when the physician is liable to lose his way in a fog of specialized diagnostic data, he may well pause to reflect on Cushing's sane admonition:

> Those who can best take advantage of existing opportunities or can originate others, not only must have had a good general training in clinical medicine and surgery, but must have been thoroughly schooled in the fundamental subjects—in the anatomy, physiology and chemistry of morbid as well as of normal tissues and organs—for without this knowledge any special branch is supported by a root lodged in sand which does not long survive overloading. There is only one way to get a secure seat on any outlying branch and that is by approaching it from the main stem, no matter how wearisome, laborious and time-consuming this process may be.

PSYCHANALYSIS

Recently the minister of a prominent church in Chicago was asked by the head of the social work department to put his approval on the establishment of a lecture course on psychanalysis. Being in doubt, he conferred with several medical men of his congregation. Finally a neurologist settled the matter by saying: "By all means have it. It should prove very popular. Half the congregation is already crazy and the other half is en route to the asylum." The jest was not wholly a jest. People are paying too much attention nowadays to their MINDS. An abnormal interest in the workings of one's own mind produces either an introspective philosopher or a "common nut." When the interest is related more or less distinctly to a concealed but nevertheless obvious fascination for cogitation on things sexual, it has elements of danger. Physicians are beginning to wonder where the normal interest of the layman in these subjects ends and the scope of the psychiatrist commences. We are flooded with books on the subject by lay psychanalysts; the "movies" picture it; the theaters dramatize it; the churches have lectures on it. In the not too distant future this psychanalytic craze, if it continues, will make the medical psychiatrist a very busy man.

THE PRACTICAL, ACCURATE DIAGNOSIS OF CHANCROID

The types of genital ulcers, descriptions of which may be found among the publications of the earliest medical writers, are more varied than is commonly realized. Chancre, an initial lesion of syphilis, is known to have a well defined exciting cause in *Spirochaeta pallida*. In erosive and gangrenous balanitis, a symbiotic occurrence of a vibrio and a spirochete offers an explanation of its etiology. In the simple ulcer most frequently designated as chancroid, the Ducrey-Unna bacillus, a micro-organism stainable with difficulty, and usually contaminated by the presence of other bacteria as the result of secondary infection, is responsible for the epithelial erosion and its immediate consequences. A recent writer [1] has remarked that there is no sing'e condition which receives such careless attention as do simple ulcers that occur on the genitalia. Few observers, he adds, realize the importance of an exact diagnosis, especially if the infection is syphilitic. Microscopic examination is called for in every instance. Heretofore the diagnosis of chancroid has usually been reached by exclusion because the Ducrey bacillus is difficult to find and urologists have learned to search for the spirochetes. Recently, however, Teague and Diebert [2] have succeeded in devising a simple cultural procedure for the Ducrey bacillus so that the diagnosis of chancroid can be made in somewhat the same way as has become universal for diphtheria. Suitably prepared tubes of clotted blood are inoculated with pus from the suspected ulcers. The organism responsible for chancroid presently appears, sometimes apparently in pure culture, as characteristic chains of small, gram-negative bacilli. The method is admittedly not entirely new, but as now demonstrated seems to be practicable without interfering in any way with the procedures for the diagnosis of syphilis or with the treatment of the chancroid.

1. Corbus, B. C., in Cabot, Hugh: Modern Urology, Philadelphia, Lea & Febiger 1: 281, 1918.

2. Teague, O., and Deibert, O.: The Value of the Cultural Method in the Diagnosis of Chancroid, J. Urol. 4: 543 (Dec.) 1920.

MERITED RECOGNITION OF MEDICAL JOURNALISM IN GREAT BRITAIN

As noted elsewhere in this issue of THE JOURNAL,[3] the list of those on whom New Year honors were conferred by King George includes the names of six physicians, four from Great Britain, one from Ireland and one from Australia. Knighthood for physicians is no new thing; neither is knighthood, or even greater honor, a new thing for journalists. But so far as we know the present list, containing the names of Drs. Squire Sprigge and Dawson Williams, editors, respectively, of the *Lancet* and the *British Medical Journal*, is the first recognition of this kind given to medical journalism. Direct service to the royal family, to the army or navy, to the government, even altruistic scientific investigations, have often been thus rewarded. The service of the medical journalist is of a different kind. The *Lancet* and the *British Medical Journal* have done much to place British medical science in the high position it occupies today. The recognition given to these men, while primarily honoring their work as medical journalists, is also a recognition of the medical profession which these journals represent. We tender to Sir Squire Sprigge and to Sir Dawson Williams our hearty congratulations.

3. Foreign News, p. 322.

A DIVERSITY OF INTERESTS

Regularly there come to the editorial office of THE JOURNAL about a thousand periodicals a month. There are the purely technical medical journals; the official publications of national medical associations abroad and of state associations at home; the bulletins of district, county and city medical societies; the house organs of pharmaceutical manufacturers; hospital publications, and what not, medical or near medical. The whole reveals a remarkable diversity of interests, not only among different nations and different states, but

peculiarly also among different county societies. Here a county society is building its own home; there a society is considering legislation affecting medical cults; here a group is discussing health insurance—perhaps logically and dispassionately; another opposes any social medical legislation, while still another is urging consideration of legislation in behalf of maternity and child welfare; many confine their activities exclusively to scientific programs. Here a lone voice shrieks that the doctors are not sufficiently commercial. And so it goes! How many of these societies—how many of us individually—see beyond our own limited circle? How many of us have sufficiently broad and open minds to subordinate our own interests in order to consider what is best for mankind as a whole? We wonder.

"BIOLOGIC THERAPY"

In this issue appears the closing instalment of the series of articles on biologic therapy. The various problems, the contradictory opinions and the commercialization of this form of therapy induced the Council on Pharmacy and Chemistry to appoint a committee to prepare and publish an authoritative review of the subject. The object of the series has been to present to physicians concise, authoritative statements concerning indications and contraindications, methods of administration, dosage, value and possible dangers of serums, vaccines and nonspecific proteins in the treatment of infectious diseases. It represents an inventory of what our stock on hand really is worth. Like any other good inventory, the data will be worth looking over from time to time during the coming year. They will also furnish a basis for comparison with future inventories. For this reason, the series is made available in pamphlet form.

Association News

THE BOSTON SESSION

Arrangements for Reunions and Similar Social Groups

The Local Committee on Arrangements for the annual session of the American Medical Association to be held in Boston, June 6-10, announces that it will gladly cooperate with those who want to arrange for meetings of special groups of physicians during the coming annual session.

Any who may be interested in arranging for reunions of medical officers who served during the World War, for class meetings, for alumni reunions or for other similar social functions, are requested to write to Dr. Beth Vincent, chairman of the Subcommittee on Reunions, addressing him at the central office of the Local Committee on Arrangements, Boston Medical Library, 8 The Fenway, Boston 17, Mass.

Test of Functional Capacity of the Liver.—Widal, Abrami and Iancovesco recently reported that abnormal conditions in the liver can be detected by the *crise hémoclasique* which develops after a protein-rich meal when the liver is incapable of transforming the proteins which reach it from the food. As the liver is unable to prevent the passage into the circulation of the more or less unmodified proteins, the latter entering the blood stream cause at once destruction of erythrocytes. This transient attack of digestive hemoclasis is easily recognized, and it testifies to impairment of liver functioning of which it may be possibly the first and for a time the only sign. It was described in full detail on page 275.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Public Hospital at Sheffield.—The county commissioners of Colbert County have appropriated $2,000 annually, and the Sheffield city commissioners $1,000 annually, for the support of a joint city and county hospital.

Health Department Laboratory Reopened.—The joint city and county laboratory at Anniston city hall has been reopened after a lapse of more than six months, and Dr. B. F. Alexander has been named bacteriologist.

CALIFORNIA

Popular Medical Lectures.—A course of popular medical lectures, under the auspices of the Stanford University Medical School, was initiated, January 14, at Lane Hall, San Francisco, by Dr. William Palmer Lucas, who spoke on the "Relation of the Doctor to Social Work." The lectures will be given on alternate Friday evenings.

Tuberculosis Sanatorium Opened.—The Olive View Sanitarium, 4 miles north of San Fernando, which will be operated as a ward of the Los Angeles County Hospital, is ready for the reception of patients. Only adult tuberculous patients in the early stages of the disease and ambulatory cases which are considered amenable to arrest will be accepted.

Hospital News.—The California Hospital at Los Angeles has been transferred to the Lutheran Hospital Society.—— The Oroville Hospital, which has been under construction for some months, was opened to the public early in January.—— The board of supervisors of Weimar Hospital, a tuberculosis institution maintained by eleven counties, has requested the state legislature to take over and operate the institution as a state hospital.——Plans are under way for the construction of an additional building for the tuberculosis hospital maintained in Springville by Tulane and Kings counties.——Dr. Adelbert C. Mathews has been named superintendent of the Napa State Hospital to succeed Dr. Andrew W. Hoisholt, deceased.

COLORADO

Tuberculosis Lecture.—Dr. Harry J. Corper Denver, delivered a lecture, January 25, before the Solly Tuberculosis Society of Colorado Springs on the history and experimental therapy of tuberculosis.

Medical Chautauqua.—During the month of January a public medical chautauqua has been given at Pueblo, under the auspices of the Seventh Day Adventists. Physicians of Pueblo, Colorado Springs and contiguous places delivered lectures on popular medical subjects and health topics, while graduate nurses gave practical demonstrations of the principles of home nursing.

Honor to Dr. Hubert Work.—The Medical Society of the City and County of Denver has appointed a committee to plan a meeting in appreciation of Dr. Hubert Work, Pueblo, the president-elect of the American Medical Association. The tentative program proposes that a meeting be held during the spring months to which each component county society shall be asked to send delegates, including in the delegation when practicable the secretary of the society. This will make it possible to arrange at the same time and place a conference of the county society secretaries.

CONNECTICUT

New Hospital.—A new hospital with accommodations for thirty-five patients has been established at 609 Farmington Avenue, West Hartford. The institution is known as the Prospect Hospital.

University Changes.—Prof. Russell H. Chittenden has resigned his position as chairman of the department of physiology, physiologic chemistry and bacteriology of Yale University Medical School and has been succeeded by Prof. Lafayette B. Mendel.

Yale Alumni Celebration.—Special exercises, including exhibits and demonstrations in the laboratories, medical and surgical clinics, and a clinicopathologic conference, will mark

the celebration of alumni day at the Yale Medical School, February 22. A luncheon will be given at the New Haven Hospital and this will be followed by a meeting of the executive committee of the alumni association with the alumni. Graduates of the medical department and other departments of the university and physicians interested in the school work are invited to attend the exercises.

DISTRICT OF COLUMBIA

Headquarters of Medical Society.—The new home of the Medical Society of the District of Columbia, located at 1718 M Street N.W., constructed of Indiana limestone, is one of the most artistic structures in the city. Its architecture is Italian Romanesque, in accord with the architectural type of federal buildings. The auditorium seats nearly 500. On the second floor there will be a library. As previously noted in these pages, the building was dedicated, January 12. The two formal addresses on that occasion were delivered by Dr. William Gerry Morgan, the retiring president of the society, and Dr. Charles W. Richardson, a member of the Board of Trustees of the American Medical Association. Since it was chartered in 1817, excepting for a short period during the Civil War and a short time during the World War, the society has held a meeting each week. The society held the first meeting in its new home, January 19, at which a symposium on neuroses was presented.

FLORIDA

Personal.—Dr. Ralph N. Green, whose appointment as captain in the Medical Corps, U. S. Army, was recently announced, has declined the appointment and will continue in his position as state health officer.

New Hospitals Dedicated.—The new Faith Hospital at St. Petersburg, erected at a cost of $75,000 and having accommodations for forty patients, was recently opened to the public. Attending physicians and surgeons must be members of the Penellas County Medical Society.——The Flagler Hospital, St. Augustine, was dedicated and formally opened, January 6, by ceremonies attended by thousands of citizens of St. Augustine. The hospital was constructed at a cost of more than $250,000.

GEORGIA

New Tri-County Society.—Physicians residing in the counties of Treutlen, Montgomery and Toombs recently met at Soperton and organized the Tri-County Medical Association. Dr. Ira E. Aaron, Lyons, was elected president, and Dr. James E. Hunt, Mount Vernon, secretary and treasurer.

County Reorganizes Health Service.—Hall County has voted to adopt the Ellis Health Law and has reorganized its health service under provisions of the act. Dr. Bron D. Blackwelder, formerly commissioner of health of Troop County, has been named commissioner of health of Hall County.

IDAHO

Fined for Illegal Practice.—It is reported that B. Goldberg, a vendor of proprietary medicines of Twin Falls, was recently found guilty by a jury in the district court of practicing medicine in violation of the state medical practice law. It was alleged that Goldberg had provided a woman with remedies and had given her treatment for neuralgia, for which he charged $40, including a fee of $10 for treatment.

ILLINOIS

Government Water Analysis Station.—The U. S. Public Health Service contemplates the erection at Peoria of a laboratory substation for analysis of waters of the Illinois River and other streams within the state. The site for the new station has not been chosen, but it is anticipated that it will be somewhere near the Union Station, as the water for analysis must be brought in tank cars.

Personal.—Dr. Ernest C. White, Springfield, member of the division of social hygiene of the state department of health, has been making a tour of the towns of Tuscola, Clinton, Quincy, Roodhouse, Danville, Okawville, Murphysboro and Benton for the purpose of delivering illustrated lectures on the diagnosis and treatment of syphilis, before meetings of the organized medical profession.——Dr. Frank P. Stedem, Saybrook, was severely injured in an accident at a crossing of the Lake Erie and Western Railroad, January 12. Both feet were so badly crushed that amputation was necessary.——Dr. Samuel E. Parr, has been elected physician of LaSalle County to fill the unexpired term of Dr. Albert J. Roberts, resigned.

Chicago

Action Withdrawn.—It is reported that the Illinois prohibition officers' charges against Dr. E. P. Murdock and Dr. Eldorado Scott, previously noted in these pages, were withdrawn without prejudice.

Joint Tuberculosis Meeting.—At a joint meeting of the Chicago Medical Society and the Robert Koch Society, held, January 26, Dr. Henry R. M. Landis, Philadelphia, delivered an address on his observations on tuberculosis as revealed in investigations at the Henry Phipps Institute. Before the meeting an informal dinner was given at the University Club by members of the societies in honor of Dr. Landis.

Henry Baird Favill Memorial.—A committee has been appointed to undertake a campaign for the collection of a fund of $500,000 for the endowment of two memorials to the work of the late Dr. Henry Baird Favill. It is proposed to create a Henry Baird Favill Memorial Laboratory, with fellowship endowments, in St. Luke's Hospital, to the interests of which Dr. Favill devoted many years of special effort. For this purpose a fund of $250,000 is solicited. A like sum is desired for the establishment of the Henry Baird Favill Foundation, the income of which shall be used in perpetuity for the promotion of public instruction in health and hygiene. Mr. Edgar A. Bancroft is chairman, and Mr. N. D. Sibley is secretary of the committee. The Merchants Loan and Trust Company, 112 West Adams Street, will act as treasurer of the fund.

INDIANA

Medical Registration Board.—Dr. William A. Spurgeon, Muncie, was recently elected president of the state board of registration and examination, and Dr. William T. Gott, Crawfordsville, was reelected secretary.

Memorial Tablet to Physician.—A tablet to the memory of Major Paul B. Coble, who died in military service in the World War, was unveiled in the medical school building of Indiana University, January 13. The Paul B. Coble post of the American Legion participated in the exercises.

KENTUCKY

Personal.—Dr. James Y. McCullough has been appointed physician of Jefferson County.

Enforcement of Narcotic Law.—According to a report of the narcotic inspector for the eastern district of Kentucky, the number of drug addicts in Kentucky has decreased 75 per cent. in the last five years. As an example of the decrease there was cited the case of two physicians who, according to government records, had under treatment five years ago 114 drug habitues and now have only four such patients. Approximately 200 violations of the Harrison Narcotic Law were reported in Kentucky in 1920.

MARYLAND

Personal.—Dr. Robert P. Bay has been appointed a member of the board of supervisors of the city charities of Baltimore, to succeed Dr. J. Whitridge Williams, resigned.——Dr. Martin F. Sloan, Baltimore, has resigned his position as superintendent of the Eudowood Sanitarium, Towson.

Physicians Honored by Friends.—On December 29, the medical staff and alumni association of the training school of the Franklin Square Hospital presented to the institution a life size portrait of Dr. Joseph H. Branham, at one time president and senior surgeon of the hospital. The presentation address was made by Dr. Bernard P. Muse, and Dr. John B. Schwatka accepted the portrait on behalf of the institution.

Society Meetings.—At a meeting of the section on ophthalmology of the Baltimore City Medical Society, held at the Faculty Building, January 19, Drs. C. E. Ferree and G. Rand, professors of experimental psychology at Bryn Mawr College, gave illustrated lectures on instruments used in the estimation of visual acuity and color perception.——At the Johns Hopkins University School of Hygiene and Public Health, January 24, Sir Arthur Newsholme, resident lecturer in public health administration, delivered an address on "National Changes and Longevity."

NEW MEXICO

County Society Disapproves Free Clinic.—At the regular January meeting of the Bernalillo County Medical Association a resolution was adopted opposing the establishment in Albuquerque of a clinic for the free treatment of charity

patients. It was maintained that free treatment should be given through charity organizations, just as food and clothing are dispensed to indigents, and since Albuquerque employs city and county physicians whose services are free to all needy persons there is no necessity for a free clinic. Physicians of Albuquerque have always been ready to render their services free to any person unable to pay for medical or surgical treatment.

NEW YORK

Medical College Granted Time for Building.—The Albany County board of supervisors has granted the Albany Medical College an extension of five years, until June, 1926, to carry out an agreement to erect a new college building on the site deeded to the college by the county in exchange for a plot once owned by the college.

Abolition of Narcotic Commission Recommended.—Governor Miller has recommended to the legislature that the narcotic control commission be abolished and that its work be placed under the jurisdiction of the state department of health. A number of medical societies throughout the state have endorsed the governor's recommendation. It was maintained that the commission was an unnecessary expense to the public and that most of its work was being done by the federal government.

New York City

Academy Increases Membership.—Resolutions were recently adopted by the New York Academy of Medicine changing its by-laws to provide for an increase in its resident membership from 1,300 to 1,350.

Fund for Study of Cardiac Problems.—The Burke Foundation has founded the Sturgis Research Fund, endowed by its president, Mr. Frank K. Sturgis. The income of the fund will be used for research in cardiac diseases and allied problems.

New Jewish Memorial Hospital.—Architects have been commissioned to draw plans for converting the buildings of the Inwood Homes for Girls, recently purchased by the Jewish Memorial Hospital, into a complete general hospital, at an estimated cost of $150,000.

Harvey Lectures.—Sir Arthur Newsholme, resident lecturer at the School of Hygiene and Public Health, Johns Hopkins University, will deliver the sixth Harvey Society Lecture at the New York Academy of Medicine, January 29, on "National Changes in Health and Longevity."

Criminal Conviction Upheld.—It is reported that the conviction of Dr. Julius Hammer for manslaughter for performing a criminal operation which caused the death of a woman in June, 1919, was upheld by the appellate division of the supreme court, January 14. Dr. Hammer was sentenced for from three and one-half to fifteen years in prison.

Survey of Cripples.—The New York Committe on After Care of Infantile Paralysis Cases has published the report of one of its special committees dealing with a survey of the cripples. The expenses of the survey were met by contributions from various organizations, associations and hospitals in New York City, supplementing a liberal gift from the Rockefeller Foundation. Under the direction of Mr. Henry C. Wright, it was sought to ascertain the number of persons crippled through different causes, the nature of the treatment given them, and the principal causes which produce cripples. Six typical districts, with an aggregate population of 110,000, were selected for the field canvass. The work of all organizations, hospitals and institutions dealing with cripples was examined to determine its character and scope. The report makes recommendations regarding the reduction of factors that produce cripples and the training of cripples to be self-supporting, and discusses the facilities in the city for meeting these requirements.

NORTH CAROLINA

Personal.—Dr. Guy S. Kirby, Marion, has been elected health officer and Dr. John B. Johnson, Old Fort, quarantine officer of McDowell County.

Hospital Notes.—In a special message to the legislature, Governor Bickett has requested the establishment of a state tuberculosis sanatorium for negroes. The measure was repeatedly recommended by the state board of health.——Two additional wings have been added to the Anson Sanatorium, Wadesboro, increasing the capacity of the hospital by twenty rooms.——It has been announced that the Baptist State Hospital will be erected at Winston-Salem, on a site in Ardmore comprising 13 acres. About $100,000 is available for immediate use, and construction will be begun early in the spring.

OHIO

Health Officers Appointed.—Dr. Harold H. Biggs, Wadsworth, has been appointed health officer of Medina County.——Dr. H. L. S. Hinkley, Greenspring, has been reappointed health officer of Seneca County for a term of two years.——Dr. Fred W. Murray, Summerfield, has been named full-time health officer of Noble County.

Academy Acts on Health Legislation.—The Academy of Medicine of Cincinnati, at its December meeting, adopted a resolution endorsing the underlying purposes of the Sheppard Towner Maternity Bill, but urged that it be amended so that the administration of the act be placed under the U. S. Public Health Service instead of under a newly organized federal board. The academy also urged the establishment of a department of public health and public welfare with an executive officer as a member of the President's cabinet.

OREGON

State Board Appointments.—Drs. Charles J. Smith, Portland, George E. Houck, Roseburg, and John H. Rosenberg, Prineville, have been appointed members of the state board of health.——Dr. James K. Locke, Portland, has been appointed a member of the state board of medical examiners to fill the unexpired term of Dr. Frank W. Wood, resigned.

PENNSYLVANIA

Hospital Opened.—The Elizabeth Steele Magee Hospital, Pittsburgh, has been reopened as the Woman's General Hospital for gynecologic and obstetric cases. The medical staff will be furnished by the University of Pittsburgh which will utilize the hospital for teaching purposes in connection with its medical school. The hospital accommodates 140 adult patients and eighty infants.

Dauphin County Health News.—The state department of health will supervise the activities of the health centers which will be established throughout Dauphin County under auspices of local committees at Linglestown, Hummelstown, Williamstown, Lykens, Wiconisco, Gratz, Hershey, Progress, Dauphin and Penbrook.——Dr. Daniel E. Hottenstein, Millersburg, has been appointed medical inspector for Dauphin County.

Philadelphia

Personal.—Dr. Thomas H. Fenton is in the Jefferson Hospital suffering from a bullet wound of the jaw, received in an attack by two highwaymen.

Phipps Institute Physical Examination.—With a view to developing an organization for the examination of workmen in industrial plants, the Phipps Institute has begun an examination of a picked group of men—policemen and firemen—that have already passed a rigid physical examination before entering the city service. Of 4,183 policemen examined about 100 had diseases of the heart, fifty-four had disease of the lungs, fifty-five diabetes, and thirty-one nephritis. Of the total number of policemen examined 338 had serious diseases and 496 had questionable defects. Among the firemen 3.7 per cent. had major defects and 5.6 per cent. were doubtful. The examinations were made under the supervision of Drs. H. R. M. Landis and F. A. Craig of the Henry Phipps Institute, and Dr. Hubley R. Owens, chief surgeon of the Department of Public Safety.

Honor to Dr. Keen.—The dinner and reception given by the medical professon of Philadelphia to Dr. William Williams Keen, at the Bellevue Stratford Hotel, January 20, in honor of his eighty-fourth birthday, was attended by 600 physicians and friends. Dr. George de Schweinitz was the toastmaster, and the speakers included Dr. William H. Welch, Baltimore, Dr. J. Chalmers DaCosta, Philadelphia, and Mr. David Jayne Hill. Major-Gen. Merritte W. Ireland, Surgeon-General, U. S. Army, presented a specially bound volume containing addresses and letters as a tribute to Dr. Keen, and Dr. William J. Taylor of the College of Physicians, presented a life size bust of Dr. Keen in army uniform, by Samuel Murray. Dr. Keen in responding gave a short sketch of his life and outlined the changes that had taken place in medicine and surgery during these many years.

SOUTH CAROLINA

Malaria Prevention Work.—Active work on the drainage of lowlands in and around the town of Andrews and Georgetown County with a view to an organized effort at malaria prevention will be begun within a short time. Dr. L. M.

Fisher, U. S. P. H. S., is in charge of the work, which is directed from the headquarters in Columbia. The funds are furnished jointly by the citizens of Andrews, the Rockefeller Foundation and the South Carolina State Board of Health.

TENNESSEE

Hospital Transferred.—The National Grand United Order of Wise Men and Women of the World, a negro fraternal organization, has purchased St. Anthony's Hospital in Memphis for the sum of $11,000. Dr. Roy B. Granberry has been appointed superintendent, and Dr. Mabel S. Fugitt, assistant superintendent.

New President of Meharry College.—Dr. John J. Mullowney, professor of science at Girard College, Philadelphia, has been appointed president of the Meharry Medical and Dental Colleges, Nashville, to succeed Dr. J. W. Hubbard, resigned because of ill health. Meharry College will shortly come into the endowment of $500,000 which was contributed for an extension of its educational work.

UTAH

Personal.—Dr. Mabel A. Genung, San Francisco, has been appointed a member of the state bureau of venereal disease control.——Dr. Alfred Cyril Callister, Salt Lake City, has been appointed Salt Lake County physician to succeed Dr. Thomas J. Howells, resigned.

WISCONSIN

Personal.—Dr. Walter W. Armstrong has resigned his position as health commissioner of the city of La Crosse.

Society Elections.—The Milwaukee Medical Society, at its meeting, January 11, elected the following officers for the ensuing year: president, Dr. Louis M. Warfield; vice presidents, Drs. Robert W. Blumenthal and Rock Slyster; secretary, Dr. Lawrence G. Sykes, and treasurer, Dr. Joseph P. McMahon.

County Sanatorium Completed.—The Jefferson County Sanatorium for the treatment of tuberculosis has been completed and accepted by the county supervisors. It is probable that ex-soldiers and patients from other Wisconsin counties will be accepted for treatment if the facilities of the sanatorium are not fully utilized by residents of the county.

CANADA

Death of Philanthropist.—Sir William Gage, originator of the King Edward Memorial Fund for Consumptives and chairman of the Toronto Free Hospital for Consumptives and of the Queen Mary Hospital for Consumptive Children, died in Toronto, January 14, aged 71.

Sudden Deaths from Arsenic Preparation.—Two distressing fatal accidents recently occurred on the same day in the practice of a well-known physician of Toronto following the injection of an arsenic product manufactured in Toronto. A coroner's jury is making a special investigation of the occurrence.

Hospital News.—A number of additions were made in 1920 to the Mountain Sanitarium, Hamilton, Ont. A nurses' home costing $85,000, two residences for the staff physicians, sun rooms, and a preventorium ward for special cases were erected. ——The Board of Control, Toronto, has granted $90,000 to the Hospital for Sick Children to cover the deficit during 1920.——It is planned to erect a new Reception Hospital in Toronto, near the General Hospital, on a site donated by the University of Toronto with which, it has been suggested, the hospital shall be affiliated for teaching purposes.

GENERAL

Plague Fund Requested.—The U. S. Public Health Service has requested Congress to appropriate a contingent fund of $355,000 for the control of bubonic plague at the ports of Boston, New York, and other points on the Atlantic Coast.

Woman's Health Foundation Meeting.—The Woman's Foundation for Health, which was organized at the International Woman Physicians' Conference held early in 1919, held its second annual meeting in New York, January 6. Fourteen women's national organizations were represented at the meeting.

Army Hospital Transfer Proposed.—A bill has been introduced in the United States Senate by Senator Joseph Robinson authorizing the transfer of Fort Logan H. Roots, near Little Rock, Ark., from the War Department to the U. S. Public Health Service. The bill proposes to make the hospital available for the treatment of discharged veterans of the World War.

Copyright Protection of Proprietary Remedy Denied.—It is reported that under a decree issued by Federal Judge Dietrich, in New York the Albany Chemical Company and its officers have been ordered to withdraw all applications for the issuance of a trade mark or other registration of the word "aspirin," whether used singly or in association with other words. The action was instituted by the federal government which alleged that the defendants had falsely claimed that no other person or corporation had the right to use the name.

Committee Seeks Data on Diphtheria Immunization.—As a result of informal discussions of the subject of active immunization against diphtheria during the Health and Sanitation Exhibition in Chicago, Nov. 24-28, 1920, a committee was appointed to investigate the efficacy of the toxin-antitoxin mixture, with special reference to untoward results. The committee, which consists of Drs. Hugh O. Jones, George H. Weaver and Abraham Levinson, is desirous of obtaining first hand information regarding any ill effects following the use of toxin-antitoxin mixtures for active immunization. Communications should be addressed to Dr. Hugh O. Jones, City Department of Health, Chicago.

The Bowdoin Medical School.—A few months ago in the course of a survey of all medical colleges, a reinspection of the Bowdoin Medical School was made by a representative of the Council on Medical Education and Hospitals of the American Medical Association. As usual, following such inspections, a frank statement of the conditions found was furnished to the president of Bowdoin College and the officers of the medical school. Recently, President Kenneth C. M. Sills, following a meeting with his trustees and overseers, issued the following statement:

> By action of the boards of trustees and overseers of Bowdoin College the Bowdoin Medical School will be finally closed as a department of Bowdoin College at the end of the current year, June, 1921, unless by that time some way shall be found to meet the requirements necessary to keep the school in Class A of American medical colleges. It has been conservatively estimated that for this purpose there must be an addition to the resources of the school of $25,000 for immediate equipment of laboratories and of at least $50,000 yearly income for more teachers and for upkeep. Unfortunately at the present time the college sees no way of procuring such funds; the need of such an endowment has often been placed before the people of Maine, but the appeals have never received an adequate response.
>
> The college will not apply for state aid for the school. But if the citizens of Maine and the friends of medical education who believe that the maintenance of a medical school is properly a state function, desire to have the medical school re-established as a state institution under state control and adequately supported by the state, Bowdoin College will be glad to give all assistance possible to that end and would doubtless offer for such a purpose for temporary use, if desired, such part of the buildings and apparatus of the college as might be available.
>
> The action of the governing boards of the college ... was taken with deep regret and for financial reasons. In 1820 the Maine Medical School was established by the State of Maine and placed "under the control, superintendence and direction of the president and trustees and overseers of Bowdoin College." For over a hundred years the college has carried on this trust to the best of its ability and has recently assumed cheerfully the deficits of the school which in the aggregate amount to over $35,000. If it were possible to continue the school in Class A without greatly impairing the funds of the college, no doubt the college would do so gladly. But it has not the funds that will yield the necessary $50,000 annual additional income. The trustees and overseers of the college believe that there is a place for a medical school in Maine and are hopeful that the people of the state, despite the great demands on the incoming legislature, will establish such a school as a state institution, around which all the medical and public health work of the state would be centered.

Senate Passes Sheppard-Towner Bill.—The Sheppard-Towner Bill providing for cooperation between state and federal governments for the care of maternity and infancy has passed in the Senate. As the bill was considerably amended prior to its passage, the more important sections are given verbatim, as they now stand.

Section 1 provides "That there is hereby authorized to be appropriated annually out of any money in the Treasury not otherwise appropriated, the sums authorized in Section 2 of this Act, to be paid to the several states for the purpose of cooperating with the state in promoting the care of maternity and infancy, and the sum authorized in Section 5 for the use of the Children's Bureau, for the promotion of maternal and infant hygiene, for the administration of this Act, for the purpose of making such studies, investigations, and reports as will further the efficient administration of this Act."

Section 2 authorizes an annual appropriation of $480,000, $10,000 to be paid to each state for administrative expenses; a further appropriation of $1,000,000 for the fiscal year ending June 30, 1922, and a permanent annual appropriation of $1,480,000 for apportionment among the states in proportion to their population.

Section 3 provides that "The Children's Bureau shall consist of the Secretary of Labor, who shall be chairman; the

chief of the Children's Bureau, who shall be the executive officer; the Surgeon-General of the United States Public Health Service, and the United States Commissioner of Education. The Children's Bureau shall have charge of all matters concerning the administration of this Act, and shall have power to cooperate with the State agencies authorized to carry out the provisions of this Act. It shall be the duty of said Children's Bureau to make or cause to have made such studies, investigations and reports as will promote the efficient administration of this Act."

Section 4 provides that cooperation shall be carried on under the direction of the Child Hygiene division of the state department of health, where one exists, and that the Children's Bureau may recommend to the state agencies the appointment of advisory committees, both state and local, and that at least half the membership of these committees shall be women.

After the usual provisions for organization, personnel, equipment, etc., Section 8 provides that any state desiring to avail itself of the benefits of the Act shall submit to the Children's Bureau detailed plans for administration and for instruction in the hygiene of maternity and of infancy through public health nurses, consultation centers and other suitable methods.

Section 9 provides for popular nontechnical lectures to be given as a University Extension Course by the various educational institutions. Section 14 forbids the use of any money appropriated under the Act for the purchase or erection of buildings or the purchase or rental of any lands.

LATIN AMERICA

Memorial Tablet for Sampaio.—A bronze tablet was recently unveiled in the medical chemistry laboratory of the University of Rio de Janeiro to commemorate the work there of Professor Diogenes Sampaio who died in 1918. He was influential in the organization of the laboratory which is henceforth to bear his name.

Personal.—Dr. Rafael Calvo C. of Colombia is now visiting in this country.——Dr. A. Hamilton Rice of Harvard University has just returned from a trip to South America.——Dr. Francisco Dominguez of Havana, Cuba, is visiting in Europe. Dr. Dominguez has devoted special attention to radiology, a subject on which he has published several books.

Next Pan-American Sanitary Congress at Havana.—At the closing session of the sixth sanitary conference of the American republics, held at Montevideo in December, it was decided to hold the seventh conference at Havana in 1923. A resolution providing for the reorganization of the international sanitary bureau at Washington, D. C., was approved.

Medical Society of Chile.—According to the last annual report of the president of the Medical Association of Chile its present membership is 185. The society has been in existence nine years and has shown a steady increase, both in the number of members and its activities. The president of the association is Dr. E. González Cortés and its official organ, the *Revista Médica de Chile* is edited by Dr. C. Charlin C. and E. Prado Tagle.

FOREIGN

Smallpox in Spain.—Our Spanish exchanges devote much attention to the prevalence of smallpox throughout Spain, and especially in the provinces of Valladolid, Almeria and Guipúzcoa. At Valladolid from August 1 to December 7, there were reported about 300 cases with forty-four deaths.

Neurologists Organize in Norway.—The Norsk neurologisk Forening was recently founded at Christiania with Dr. Monrad-Krohn, president, and Dr. H. Saethre, secretary. It is proposed to hold quarterly meetings of the society, membership in which is open to all who are interested in neurology.

Far Eastern Association of Tropical Medicine.—It is announced that the next annual meeting of this association will be held at Weltevreden, Java, in August, 1921. The Weltevreden physicians forming the organization committee for the meeting are planning to issue as a souvenir a complete edition of the works of Bonthuis, in Latin and English. The edition, limited to 500 copies, is expected to cost 15,000 florins, and the Netherlands Academy of Sciences has been appealed to for financial aid as well as for scientific cooperation in the meeting.

Memorial to Sir Victor Horsley.—Friends and former colleagues of the late Sir Victor Horsley have taken steps to commemorate his services to science by the foundation of a lectureship or scholarship bearing his name. A general committee has been appointed under the chairmanship of Sir Charles Ballance to raise the necessary fund. Subscriptions may be sent to the honorary treasurers, Sir Frederick Mott, 25, Nottingham Place, W. 1, and Dr. H. H. Tooth, 34, Harley Street, W. 1, London, or to the honorary secretaries, Sir W. Arbuthnot Lane, 21, Cavendish Square, W. 1, London, and Hon. Edward J. Domville, Symondsbury, Bridport.

Knighthood Conferred on Physicians.—In the list of New Year honors conferred by the king of England appear the names of four medical men: Dr. William Hodgson, mayor of Crewe, known chiefly for services to scientific education in Cheshire; Dr. Charles Ryall, senior surgeon to the Cancer and Bolingbroke hospitals and author of numerous works on cancer; Dr. Squire Sprigge, editor of the *Lancet*, on which he has served since 1892, author of "Methods of Publishing" in 1890, "Life and Times of Thomas Wakley" in 1896, and "Odd Issues" in 1898, also editor of other notable works; and Dr. Dawson Williams, editor of the *British Medical Journal* since 1898, and author of "Medical Diseases of Infancy and Childhood" in 1898. Knighthood was also conferred on Dr. E. Coey Bigger, chairman of the Irish Public Health Council, and Dr. Alexander S. Hood of Sydney, Australia.

Government Services

MEDICAL OFFICERS, UNITED STATES NAVY, RELIEVED FROM ACTIVE DUTY

CONNECTICUT
Hartford—Spillane, B.

GEORGIA
Augusta—Cremens, J. F.

NEW YORK
Brooklyn—Daly, J. F.
New York—Weston, A. T.
West Chazy—Stiles, H. R.

VIRGINIA
Portsmouth—Holladay, G. G.
Sutherland—Spangler, P. C.

Special Classification of Medical Officers

In the near future Surgeon-General Ireland will issue a questionnaire designed to elicit information regarding the capabilities, aspirations and preferences of each officer in the service. While in many instances it will not be immediately practicable to place officers in the work and station that they especially desire, the information obtained through the questionnaire will furnish detailed data as to the aims and qualifications of every commissioned medical officer in the Army.

Numerical Strength of the Army Medical Corps

While pending legislation in Congress aims to fix the size of the Army at 175,000 men, it is virtually assured that there will be no reduction in the commissioned personnel of the Medical Corps. The existing law fixes the number of commissioned officers of the Medical Corps in the ratio of "6½ to every thousand men," and while the Army at the time numbers 280,000, the Medical Corps has barely more than 50 per cent. of its maximum allowance of officers. It is clear therefore that, notwithstanding the probability that Congress will reduce the Army by more than 100,000 men, there is no necessity for any material reduction in the number or relative rank of medical officers.

Army Training School for Nurses

The Surgeon-General of the Army has received notice from the board of regents of the University of New York that the Army School of Nursing has been registered as an approved training school for nurses. The Army School of Nursing is conducted in connection with the Walter Reed Hospital, Washington, D. C., and the Letterman General Hospital, San Francisco. The school at San Francisco is considered a branch of the parent institution at Washington and is maintained for the benefit of applicants whose homes are in the West. When the Army Medical School is established on the grounds of the Walter Reed Hospital, the nurses' training school will be organized as one of its departments. There are at present 520 student nurses enrolled in the school, 500 of whom will be graduated next summer following a three years' course of instruction. In addition to the facilities afforded by Army hospitals, arrangements have been made to give the student nurses special instruction in affiliated civil hospitals and welfare institutions.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 3, 1920.

The Prevention of Venereal Disease

The problem of venereal disease continues to be discussed with some heat in the press. The Society for the Prevention of Venereal Disease criticizes the refusal of the ministry of health to grant financial support to the economic policy of the society, which advocates that those who persist in exposing themselves to risk should be taught to purchase, carry and apply a simple disinfectant that has been proved effective in warding off infection. The establishment of numerous disinfection depots to which persons can repair after exposure to risk is an unwarrantable expense, the society considers, in view of the fact that avoidable loss of time is entailed, that the services of a trained attendant are unnecessary, and that the method of application of the disinfectant is extremely simple and easy. The National Council for Combating Venereal Disease, a rival organization which has not the same faith in disinfection as the society and inclines more to moral suasion, has recently obtained from the ministry of health a grant of $40,000 for the purpose of sending missions to the dominions and the colonies on the task of endeavoring to prevent venereal disease by moral rather than medical propaganda. This the society pronounces a waste of public money. Sir George Newman, principal medical officer to the ministry of health, reports that during the year ending March 31, 1919, $1,150,000 was spent on venereal clinics, and the expenditure must have greatly increased since that date. The society holds that such expenditure, together with a large portion of the huge sums spent in the upkeep of asylums, nervous disease hospitals and general hospitals, would be unnecessary if venereal disease was prevented, as it undoubtedly could be, were the economic policy of the society persistently and widely taught. The society affirms that it is prepared to bring conclusive evidence as to: (1) the efficacy of immediate self-disinfection in the male as a prevention of venereal infection and the possibility of almost completely eradicating the disease by this means; (2) the gross inaccuracy of the statistics supplied to the ministry by the war office; (3) the failure of the government, the war office and the ministry of health to organize public education on this subject or carry out any thorough scheme for testing the efficiency of immediate self-disinfection as a preventive of venereal disease, either during the war or since; (4) the increase of venereal disease since the armistice, and its necessary effect on innocent women and children, by increasing sterility, miscarriages and the production of diseased children; (5) the large amount of support for a campaign of education in the principles and practice of the prevention of venereal disease by means of immediate disinfection that is given by organized labor, the medical profession and virtually all who have had personal experience in such methods, and (6) the great financial burden that venereal disease is to the nation. As the society receives no financial help from the government, it is entirely dependent on the public, to whom it appeals for money to carry on its educational campaign.

On the other hand, the National Council for Combating Venereal Diseases reports on the commission sent, with the authority of the colonial office, to study the social conditions and the steps to be taken locally to combat venereal disease in the East. It has had a warm welcome during its journey across Canada. The Canadian Council for Combating Venereal Disease, and the public health authorities, took the opportunity which the presence of the commission afforded to conduct a vigorous campaign of instruction, and to enlist public support throughout the dominion, and the valuable assistance given by the press greatly added to the success of these meetings. A large meeting was held at Toronto, November 8, under the chairmanship of Justice Riddell, and a resolution was passed urging that the Ontario council should be reorganized on the lines of the National Council in Great Britain, so that closer cooperation might be obtained between the government and the provincial and municipal authorities. Branches of the Ontario council are to be formed at Hamilton, Brantford and London, and the Canadian Manufacturers Association and the Trades and Labor Council are to assist the campaign. Prior to the departure of the commission for Hong Kong and other eastern ports, it was able to convene a meeting at Victoria of representatives of virtually every organization in British Columbia, and a committee was formed to assist the Canadian council in attacking venereal diseases as a general health problem.

Medical Secrecy and Panel Patients

The ministry of health has issued a new form of record for panel patients in the form of an envelop which is to follow the patients throughout life from one physician to the next one under whose care he comes. On this envelop is to be recorded all particulars as to the patient, including the disease for which he has been treated. It is contended that these envelops will assist the progress of medicine by revealing the whereabouts of disease and giving to each new physician a picture of his patient's condition. But as these envelops must be shown to medical officers appointed by the ministry and to such other persons as may be appointed for the purpose, and, when the patient moves to a new district, must be sent to the local insurance committee, they have been severely criticized in the press as a violation of professional secrecy. Again, physicians with large practices are often too busy to keep records and employ clerks for the purpose, to whom, necessarily, medical secrets will be open. Suppose a girl has an illegitimate child or a miscarriage: That damning fact will be on record against her ever afterward. Some forms of disease, such as venereal, patients would strongly object to being disclosed to others than the physician who treated them. On the other hand, the desirability from the medical point of view of a complete history of the patient's illness being available by every physician under whose care he or she may come, and also for statistical purposes, cannot be gainsaid. The authorities seem to be somewhat in a dilemma in the matter.

PARIS

(From Our Regular Correspondent)

Dec. 24, 1920.

The Centenary of the Academy of Medicine

The celebration of the centenary of the Academy of Medicine was observed in accordance with the appointed program. Dr. Albert Brochin, whose father was editor of the *Gazette des hôpitaux* (now in its ninety-fourth year), and who has himself, for many years, edited for that journal the transactions of the Academy of Medicine, has just published in it some reminiscences especially interesting at this time. He recalls the fact that the academy did not immediately give certain very important discoveries the hearty welcome they deserved. For example, when Villemin submitted to the academy his discoveries in regard to the virulence and contagiousness of tuberculosis—antedating, as they did, by several years the discoveries of Koch—the assembly remained skeptical, and some time elapsed before the academy appreciated the value of this discovery. It was even worse in the case of Pasteur, who encountered in the Academy of Medicine several members (Jules Guérin, Peter, Depaul) who were implacable opponents. "Who is this chemist who is trying to revolutionize medicine" was the question often heard.

Brochin recalls also the systematic opposition encountered by certain candidates for admission to the academy, mentioning especially the surgeon Péan, who had presented to the academy a series of cases in which he had performed ovariotomy or hysterectomy, with reference to which opinion was divided. Some members of the academy expressed indignation and others admiration. In his first series of cases Péan had presented merely the tumors he had removed. But a certain clique of academy members was so unfavorably disposed toward him that he was accused of presenting the tumors of patients who had not survived the operation. On the advice of his teacher, Nélaton, he presented, at a later meeting, the patients along with the tumors. Some still thought that a scandal was being perpetrated, but Péan persevered and was finally admitted to the academy.

Preferential Milk Tickets

As milk is very scarce in Paris, some have advised reintroducing the custom of preferential milk tickets, procurable on presentation of a physician's certificate and entitling the holders to prior consideration in view of children or sick persons in the family; but the authorities have decided that certificates may be issued, for a definite consideration, only by physicians of the Assistance médicale à domicile. This decision has brought forth vigorous protests from physicians who find themselves thus restricted in the exercise of their profession and placed at a disadvantage as compared with the physicians of the Assistance médicale. It makes it possible for the latter to abuse the privilege in order to secure new clients at the expense of other physicians. The Syndicat des médecins of the department of the Seine, the Syndicat médical of Paris, and certain other professional bodies have lodged a protest with the chairman of the municipal council against the exclusive right accorded to the physicians of the Assistance publique to issue milk certificates.

The Responsibility of Physicians

The civil chamber of the Court of Cassation, the supreme court of France, rendered an interesting decision recently touching upon the responsibility of physicians. A young woman had so much down and hair on her face that she felt disgraced and decided to have them removed. She consulted a physician and he used roentgen-ray treatment, which proved successful so far as the disappearance of the hair was concerned. The young woman, however, had contracted a dermatitis from the roentgen-ray treatment, which, although it healed, left visible marks on the face. By reason of this fact she instituted a damage suit against the physician who had treated her. The court of appeals assessed damages against the defendant in favor of the plaintiff, basing the decision on the statement that roentgenologic treatment may have grave consequences for the patient, even though minute precautions are taken and in spite of the skill of the practitioner, and that, in view of the fact that the physician was not confronted with a disease which he was expected to cure but was only dealing with a simple physical imperfection which he was to get rid of or to conceal, it was a tort justifying an action for damages for the physician to undertake the responsibility of removing down and hair from the face of his client, thereby producing permanent lesions on her face. Responding to the appeal of the defendant, the civil chamber of the supreme court, taking into consideration the fact that the law charges the responsibility for damage caused to others to the account of the one who, through fault, negligence or imprudence, causes the damage, decided that the law applies to all torts whatsoever that any person, irrespective of his position or profession, may commit and which work hardship on others, and that no exceptions may be made in favor of physicians. Therefore, the supreme court decided that the assessment of damages against the defendant was justifiable, and rejected his appeal.

MADRID

(From Our Regular Correspondent)

Jan. 5, 1921.

The Malaria Problem in Spain

Malaria is a problem that has caused many troubles in Spain. Not the least has been the appointment by the International Red Cross Association of a commission to study malarial conditions in Spain and perhaps suggest some prophylactic or therapeutic measures. The commission requested, most courteously, permission from the secretary of the interior to carry out its work. This permission was granted immediately. Somebody, however, who ranks the secretary, considered this as a bad precedent and intimated to the secretary his displeasure. The secretary, lacking personal knowledge of the matter, especially as regards its sanitary aspects, although they form such an important part of his department's work, and apparently in complete ignorance of national rights, had nothing to say in defense of his previous action. Therefore, when the commission arrived at Barcelona, it faced so many difficulties that, after remaining some time there, it at last got tired of waiting and returned to Geneva. In the meanwhile, the government, to show that it was doing something, assigned to the antimalaria campaign not the appropriation of 500,000 pesetas ($67,250) which had been promised before, but the appropriation of 150,000 pesetas ($20,175) assigned to combat all infectious diseases. A commission was appointed which was presided over by a prominent scientist and had as its members an official of the Alfonso XIII Infectious Diseases Institute and an engineer. As might have been expected, the first act of the commission was to specify the fees which its members should receive. The protests of the newspapers caused the acceptation of the suggestions of *El Siglo Médico*, which asked that quinin should be distributed freely from drug stores, cigar stores and even the taverns at malaria-infected places. This product was therefore sent to Cáceres, which is apparently the place most infected, and in order to attend to the distribution of the quinin, several quinin distributors have been appointed at rather high salaries.

Practice of Medicine in Spain by Foreigners

Since 1869, all foreigners have enjoyed the privilege of practicing in Spain the professions studied by them at foreign universities without any more restrictions than the bureaucratic ones to which Spaniards themselves are submitted. This generosity, however, has not been reciprocated by the countries who profit most by it. Spanish physicians who have to struggle with the economic conditions, mentioned so often in these letters, have also to compete with the large number of foreign physicians who, we may add, have not always been a credit to the schools where they received their diploma. In addition, entirely too often they have not been very correct in their behavior toward Spanish physicians. The result was that these foreigners brought neither science with them nor a spirit of fellowship; or perhaps they imagined they were not bound to exhibit this toward native physicians of a country which they treat as if it were a colony. Spanish physicians, incensed at this conduct and taking into account that the number of foreign physicians is increasing steadily, succeeded in having the government heed their complaints. A decree has therefore been issued, which substantially provides that the secretaries of education and national welfare can hereafter permit the practice of the professions of medicine, dentistry, civil engineering and mining engineering only to persons who receive their degree in countries which reciprocate with Spain. Besides, in view of the fact that most licenses granted to foreigners to practice their profession in Spain are, according to the terms of the law, only temporary, all present licenses granted to persons who have foreign

diplomas will become void as soon as the present license expires. Spanish physicians rejoice over this well justified measure, although there remain some pessimists who now fear that countries having an excess of professionals, such as Germany and especially Austria, may adopt reciprocity laws which will permit them to send to this country their overflow of physicians.

BELGIUM

(From Our Regular Correspondent)

Dec. 31, 1920.

The Regulation of Prostitution

M. Jasper, minister of the interior, has called the attention of all the communal governments to the urgent necessity of waging an effective campaign against the spread of syphilis. He has laid stress on the fact that the best weapon consists in the discovery and sterilization of germ carriers; furthermore, the creation of intercommunal dispensaries giving free treatment should be extended. In this connection he announced that the suppression of the regulation of prostitution is being considered, and with this eventuality in mind he submitted a questionnaire to the various communes. His replies will serve as a basis for the general inquiry that the hygienic service is expecting to make in furtherance of the campaign against prostitution. The problem is covered, in the main, by these three questions: 1. Is prostitution regulated in the communes; if so, what form does the regulation take. 2. Is there any medical control of prostitution in the commune; if so, how is it managed? 3. Do the regulatory measures and the medical control have a tendency to prevent clandestine prostitutes from coming within the range of antisyphilitic treatment?

The Franking Privilege of Pasteur Institute

It has been the custom for some time past to allow physicians to send free of charge any specimens intended for examination by the Pasteur Institute. This privilege exerted a favorable influence on the campaign against contagious diseases; particularly against tuberculosis, syphilis and rabies. During the present period of retrenchment a desire to take away this privilege has become manifest, which would greatly impair the laboratory service so much needed by physicians residing at some distance from university centers. Thanks, however, to the steps taken by the Pasteur Institute and the Public Health Service the superintendent of the mail service has reconsidered the question and has decided that, pending a definite decision in the matter, the necessary instructions will be given to insure, for the time being, that no charge will be made for sending empty tubes or specimens for analysis.

Marriages

BERTE O. EDWARDS, Asheville, N. C., to Miss Emorie Doughton, N. C., at Washington, D. C., recently.

WILLIAM HEISKELL DEADRICK to Mrs. Ava Van Leer Lusby, both of Hot Springs, Ark., January 8.

LUTHER S. LOVE, Silver Point, Tenn., to Miss Vera Sanders of McMinnville, Tenn., November 7.

W. LOUIS CHAPMAN to Miss Geneva Jefferds, both of Providence, R. I., December 20.

GEORGE A. STEWART to Miss Eleanor Bittinger Wolf, both of Baltimore, January 8.

ALBERT H. HILL to Miss Emma L. Treibley, both of Mifflinburg, Pa., December 24.

JOSEPH SEYMOUR TENNEN to Miss Mollie Brody, both of Brooklyn, January 2.

LOUIS BAZET to Mrs. Angele Beaudry, both of San Francisco, January 14.

HENRY L. PICARD to Miss Julia Conlin, both of Philadelphia, January 12.

Deaths

Godfrey Roger Pisek ● New York; New York University, New York, 1897; aged 47; professor of pediatrics and diseases of children in the University of Vermont, Burlington; a member of the staff of Post-Graduate, New Utrecht and Mineola hospitals and Darrach Home for Children; a member of the American Pediatric Society; died, January 19, from heart disease.

Arthur Mathewson, Washington, D. C.; University of the City of New York, 1861; aged 84; passed assistant surgeon, U. S. Navy, during the Civil War; at one time president of the American Ophthalmological Society; a founder and chief surgeon of the Brooklyn Eye and Ear Hospital; died, December 31, from arteriosclerosis.

John Stewart Gordon, Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1889; aged 65; at one time city and county physician of Ogden, Utah, president of the Ogden General Hospital, and surgeon for the Southern Pacific Railroad; died, January 5, from injuries received when he was struck by a motor truck.

Victor B. Weller ● Delaward, Ohio; Starling Medical College, Columbus, 1901; aged 43; captain, M. C., U. S. Army, and discharged, Jan. 28, 1919; secretary of the Delaware County Medical Society; was instantly killed, January 12, when he jumped from a moving passenger train.

Fred Ward Eastman, Lee Summit, Mo.; College of Physicians and Surgeons in the City of New York, 1913; aged 37; captain, M. C., U. S. Army, and discharged, Aug. 26, 1919; physician for a mining company in Bolivia, Argentine; died, January 6, from typhus fever.

Jeremiah H. Stealy ● Freeport, Ill.; Jefferson Medical College, Philadelphia, 1883; aged 61; at one time attending physician and surgeon to the Francis and Globe hospitals; died at the University Hospital, Ann Arbor, Mich., January 10.

Claude Edison Sims, Shoals, Ind.; Indiana Medical College, Indianapolis, 1906; aged 41; superintendent of the Fort Lapwai Tuberculosis Sanatorium for Indians, Lapwai, Idaho; died, January 13, from tuberculosis.

Hugh Kerr Aiken, Laurens, S. C.; Medical College of the State of South Carolina, Charleston, 1890; aged 53; president of the Laurens National Bank; died, January 5, from the effects of a wound of the head.

Charles D. Wooden, Rochester, N. Y.; Bellevue Hospital Medical School, New York, 1876; aged 71; a member of the Medical Society of the State of New York; died, January 8, from heart disease.

Hugo E. Wangelin ● Belleville, Ill.; University of Minnesota, Minneapolis, 1891; aged 52; also a dentist; president of the local board of education for five years; died, January 13, from pneumonia.

James Herbert Moore, Brookline, Mass.; New York Homeopathic Medical College, 1884; aged 59; professor of diseases of children in Boston University School of Medicine; died, January 8.

C. Clarence Sichel, New York; University of Pennsylvania, Philadelphia, 1899; aged 44; one of the founders and at one time chief surgeon of the Washington Heights Hospital; died, January 10.

Gustav Adolph Theiss, Akron, Ohio; Western Reserve University, Cleveland, 1894; aged 50; a member of the Ohio State Medical Association; was shot and killed by a bandit, January 8.

Everard William Mahler ● New Orleans; Tulane University, New Orleans, 1905; secretary-treasurer of the Louisiana State Board of Medical Examiners; died, January 22, from pneumonia.

George L. Hutchinson ● Los Angeles; Long Island College Hospital, Brooklyn, 1884; aged 61; assistant surgeon of the Southern Pacific and several other railroads; died, January 7.

William McFadden, Philadelphia; Jefferson Medical College, Philadelphia, 1876; aged 76; for many years a member of the board of health; died, January 9, from heart disease.

Dunlop Thompson, Morven, N. C.; University of Maryland, Baltimore, 1901; aged 40; died, January 5, from the effects of a gunshot wound of the head, self-inflicted, it is believed.

Frederick James Thorpe Old, Los Angeles; University of Toronto, Ont., 1891; aged 49; a member of the Medical Society of the State of California; died, December 31.

● Indicates "Fellow" of the American Medical Association.

Archie Clarence Brindle, West Liberty, Ohio; Jefferson Medical College, 1897; aged 50; a member of the Ohio State Medical Association; died, January 9, from pneumonia.

Owen Thomas Kenyon, Dawson, Ga.; Tulane University, New Orleans, 1886; aged 54; captain, M. C., U. S. Army, and discharged, Dec 5, 1918; died, January 7.

William Elbridge Boardman, Boston; Harvard University Medical School, 1868; aged 66; a member of the Massachusetts Medical Society; died, January 11.

Benjamin Seaver Blanchard ✱ Brookline, Mass.; Harvard University Medical School, Boston, 1882; aged 64; died, January 4, from rheumatic fever.

Charles Frank Tincher, Jamestown, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1889; died, December 5, from cerebral hemorrhage.

Joseph T. Rieves, Greensboro, S. C.; Louisville (Ky.) Medical College, 1891; aged 60; at one time city physician; died, January 12, from septicemia.

William Joseph Hierstein ✱ Dyersville, Iowa; College of Medicine and Surgery, Chicago, 1909; aged 37; died in Dubuque, Iowa, January 12.

Orlando Camellia Hook, Seaman, Ohio; Cincinnati College of Medicine and Surgery, 1875; aged 65; died, December 29, from cerebral hemorrhage.

Elbert C. Lay, Rutledge Pike, Tenn.; University of Tennessee, Nashville, 1887; aged 68; at one time state representative; died, December 22.

Robert Lee Randolph ✱ Alexandria, La.; Tulane University, New Orleans, 1884; aged 58; lieutenant, M. C., U. S. Army; died, January 14.

John Scott Tate, Waco, Texas; College of Physicians and Surgeons, Keokuk, Iowa, 1868; aged 78; died, October 31, from heart disease.

George W. Shafer, Washington, D. C.; Starling Medical College, Columbus, 1865; aged 86; a veteran of the Civil War; died, December 5.

James H. McDonald ✱ Chicago; Chicago Medical College, 1876; aged 69; for twenty-five years city school physician; died, January 21.

Arthur L. Ridgman ✱ Grand Rapids, Mich.; College of Physicians and Surgeons, Keokuk, Iowa, 1885; aged 63; died, November 13.

Clarence N. Frame ✱ Independence, Mo.; Missouri Medical College, St. Louis, 1895; aged 50; died at Los Angeles, December 27.

Mary A. Seymour Breckington, Chicago; Hahnemann Medical College and Hospital, Chicago, 1882; aged 82; died, January 17.

Alexander Guthrie, Neosho, Mo.; Medical College of Ohio, Cincinnati, 1866; aged 78; died, November 20, from lobar pneumonia.

Charles L. Swift, Castle Creek, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1881; aged 70; died, December 28.

Arnon Lynn Thompson ✱ Madisonville, Ky.; University of Nashville, Tenn., 1903; aged 41; died, January 7, from pneumonia.

Leslie Horatio Hendee, Pittsfield, Mass.; Baltimore Medical College, 1894; aged 50; died, December 31, from nephritis.

Walter Scott Wallace, Newport, Wash. [illegible] School of Medicine, [illegible], 1900; aged 37; died, December 21.

Clarence A. Jenks ✱ Los Angeles; University of Southern California, Los Angeles, 1903; aged 44; died, January 8.

Henry C. Gibson, Chadron, Neb.; [illegible] College of St. Joseph, Mo., 1900; aged 53; died, January 1.

Peyton B. Green ✱ Wytheville, Va.; University of Virginia, Charlottesville, 1885; aged 59; died, December 19.

John Louis Burgess ✱ Waco, Texas; Vanderbilt University, Nashville, Tenn., 1900; aged 44; died, January 6.

Edward J. Nolan, Philadelphia; University of Pennsylvania, Philadelphia, 1867; aged 58; died, January 7.

James Johnston McFadden, Buffalo; Rush Medical College, 1875; aged 70; died, December 28.

Eugene F. Finley, Brooklyn; University of Louisville, Ky., 1892; aged 52; died, January 5.

Carl Muth ✱ Sheboygan, Wis.; Rush Medical College, 1868; aged 78; died, January 14.

Malcolm Gunn, St. Louis; Rush Medical College, 1890; aged 53; died, January 12.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE FRAUD ON THE PUBLIC AND ON THE PROFESSION

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the U. S. Department of Agriculture

Benetol Suppositories.—In January, 1919, the Benetol Co. of Minneapolis, Minn., shipped a quantity of "Benetol Suppositories" which were misbranded. The Bureau of Chemistry reported that analysis showed these suppositories to consist essentially of cacao butter, carrying alpha- and beta-naphthol, boric acid and traces of menthol and carbolic acid. The labels and circulars accompanying the suppositories represented that they were a treatment, remedy and cure for special diseases of women, leucorrhea, whites, vaginitis, vulvitis, cervicitis, endometritis, gonorrhea and all

Benetol Rectal Suppositories
There is NO SURER Treatment Than Benetol
—For—
PILES, HEMORRHOIDS AND RECTAL FISTULAE.
Diseases of the Rectum or lower opening of the Bowel produce much agony, and are often very stubborn. These suppositories, used as directed, will convince you as no talk can.
THERE IS NOTHING "JUST AS GOOD"
as These Suppositories
Because None Other of the Kind Contain
BENETOL.
These Rectal Suppositories are recommended by physicians as the most effective treatment for piles or hemorrhoids, rectal fistulae, sinuses and other diseases of the rectum—used in conjunction with Benetol Ointment remarkable and most satisfactory results are secured.
50c the package.

diseases of the vagina, inflammation or irritation of the cervix and sexual diseases. These claims were declared false and fraudulent. In December, 1919, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7795; issued Nov. 26, 1920.*]

Vinol.—During 1917 and 1918 Frederick Stearns & Co. of Detroit are alleged to have shipped a quantity of this preparation from Michigan to New York. The federal officials seized 539 cases of it on the charge that the product was misbranded. When analyzed by the Bureau of Chemistry it was reported that the stuff consisted essentially of sherry wine containing protein matter, iron peptonate, citrate of iron and ammonium, salicylates, phosphates, and probably glycerophosphates of sodium, potassium and calcium and also sodium chlorid (salt). A number of false and fraudulent claims for curative effects were made in the trade package both in English and in a foreign language. It was also falsely claimed that it could be used in place of cod-liver oil and that it contained the "medicinal and restorative elements of cod-liver oil." In May, 1919, Chester Kent & Co., claimants for the shipment, having consented to a decree, judgment was entered ordering the release of part of the article for export and condemning and forfeiting the remainder, this remainder being released on order of the court to the claimant on the payment of the cost of the proceedings and the execution of a bond.—[*Notice of Judgment No. 7840; issued Dec. 8, 1920.*]

Mir-A-Co.—In June, 1919, the Mir-A-Co Co., Houston, Texas, were alleged to have shipped a quantity of this product into Louisiana. The label gave what purported to be the analysis of this product. How the claimed analysis varied from the facts is here shown:

	GRAMS PER LITER	
	As Labeled	*As Found*
Sulphur (as SO_3)	87.260	53.358
Iron (as Fe_2O_3)	36.420	30.224
Phosphorus (as P_2O_5)	0.638	0.383
Alumina (as Al_2O_3)	19.442	1.079
Chlorin	0.012	0.140
Silica	0.250	.....
Magnesia (as MgO)	1.340	.....

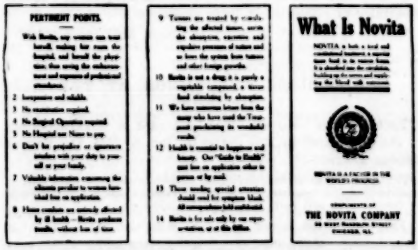
In addition to the false and misleading statements regarding composition, there were many fraudulent therapeutic claims made for the product. In January, 1920, no claimant having appeared, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed. —[*Notice of Judgment No. 7842; issued Dec. 8, 1920.*]

Novita Remedies.—A quantity of "Novita Globules," "Novita Capsules," "Novita Salve, Stainless" and "Novita Salve, Brown" were shipped by the Novita Co., Chicago, Ill., over a period from February, 1918, to February, 1919. All of these were declared misbranded. The "Novita Globules" when analyzed by the Bureau of Chemistry were found to consist of sugar-coated pills, containing essentially potassium nitrate, podophyllin, oil of juniper, uva ursi, starch and a plant drug, probably digitalis. Some of the false and fraudulent claims made for the "Globules" were:

"Specific for Kidney and Bladder Troubles."
"No remedy has so many marvelous cures to its credit as Novita, and none can successfully take its place."
"The salutary impetus which this promoter of vital energy communicates overcomes their inaction and averts diseases of which that inaction is premonitory.
". . . the stimulus which it gives to urination is attended with no exciting or inflammatory influences upon the kidneys and bladder . . ."

"Novita Capsules" when analyzed by the federal chemists were found to consist essentially of a saponifiable base, containing hydrastis and a small amount of tannin. Some of the false and fraudulent claims made for these capsules were:

"Novita Capsules For diseases of the uterine organs.
"A three months' course often effects a cure, but in very stubborn cases, where there are other complications, a longer treatment is required.
"Menstrual derangements Suppressed or irregular menstruation, displacements."
"All tumors or cancerous formations."



"Novita Salve, Stainless" was found, according to the Government report, to consist essentially of a saponifiable base containing salts of lead and mercury, apparently ammoniated mercury and lead acetate, with a small amount of acetanilid. Some of the false and fraudulent claims made for Novita Salve, Stainless were:

"A nerve and tissue remedy for external use."
"Use freely . . . particularly in ovarian tumor and cancerous affections."
". . . for eczema, scrofula, and facial eruptions."
". . . especially valuable in nerve trouble."
"In cases of rheumatism, stiffened joints or limbs . . . will . . . bring back vitality and strength to the parts."
"This salve furnishes nutriment to the body through the medium of the skin."

"Novita Salve, Brown" was reported by the Bureau of Chemistry to consist of a saponifiable base containing hydrastis and a tannin-bearing drug." The same false and fraudulent claims were made for the brown salve as were made for the stainless salve and in addition the following fraudulent claims:

"It is especially helpful in cases where the ovaries are diseased, and where the spine or limbs are affected."
"It will also produce a growth of adipose tissue or fat just beneath the skin, making the form plump and round."

In April, 1920, John B. Danis and his assignee, Herbert H. Gray, having consented to a decree, judgment of condemnation and forfeiture was entered and the court ordered that the product be released to these claimants on payment of the costs and the execution of a bond of $500.—[*Notice of Judgment No. 7784; issued Nov. 26, 1920.*]

Pepso-Laxatone.—The Burlingame Chemical Co., Los Angeles, Cal., shipped in September, 1919, a quantity of Pepso-Laxatone which was adulterated and misbranded.

PEPSO-LAXATONE

A DIGESTANT LAXATIVE

Digestive Ferments with Cascara Sagrada.

A palatable, exceedingly effective and reliable preparation for the permanent relief of habitual constipation and disorders of digestion.

Each fluid ounce contains:

Pepsin	8 grs.
Pancreatin	4 grs.
Diastase	½ gr.
Hydrochloric Acid, C. P.	8 minims
Lactic Acid, C. P.	3 minims
Cascara Sagrada	60 grs.

When analyzed by the Bureau of Chemistry it was found to consist essentially of alcohol, water, sugar, pepsin and a laxative plant drug. The label declared that Pepso-Laxatone contained pepsin, diastase and pancreatin. It contained neither diastase nor pancreatin and this claim was, therefore, declared false and misleading. Further, the product was claimed to be "An efficient combination of agents for the permanent relief of . . . Gastric Disorders and Indigestion"; this claim was declared false and fraudulent. In February, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7770; issued Nov. 26, 1920.*]

Alkano.—This product was alleged to have been shipped in March, 1919, by the Alkano Remedy Co. of Kansas City, Mo. The chemists of the government reported that analysis showed it to consist essentially of potassium iodid, plant extractives, including resins, saponin, strychnin, glycerin, invert sugar, alcohol and water. It was falsely and fraudulently recommended for "rheumatism, blood poison . . . skin diseases, constitutional catarrh . . . rundown condition," etc. In September, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 7849; issued Dec. 8, 1920.*]

Aims of Physical Training.—What does physical training set out to accomplish? What are its aims? Its primary aim is not the acquisition of mere strength or masses of muscle, but rather the development of both body and mind. It seeks to exercise every muscle in the body more or less equally favoring no one group at the expense of another. In this way it certainly—if continued—not only improves muscular efficiency but develops the entire body. The exercise increases the physiologic activities of the body, deepens respiratory action, tones up all bodily functions, and induces a higher state of nutrition generally. Incidentally, the flushing of the brain with newly oxygenated blood will inevitably produce a mental vigor and freshness otherwise impossible. To increase a child's physical welfare is therefore the primary aim of physical training.—*Med. Officer* **24**:227 (Nov. 27) 1920.

Correspondence

IMPORTANT CONSIDERATIONS IN THE ADMINISTRATION OF ARTIFICIAL PNEUMOTHORAX

To the Editor:—At present the laity demands artificial pneumothorax in the treatment of pulmonary tuberculosis, owing, no doubt, to the wonderful improvement in many hopeless cases following compression of the lung. Naturally there are some bad results with this form of treatment. Those who are made worse are always ready to condemn the method, as are also their friends and associates. It is apparent that artificial pneumothorax will go through the same cycles of popularity and condemnation as have other treatments for tuberculosis, such as tuberculin, unless changes are made in the selection of patients and method of administration. There will then be many patients who will die without this treatment who might have their lives prolonged with it. This state of affairs must be avoided, and can be, by the standardization of the treatment.

The method of administration seems to differ with each operator. The amount of air given and the interval between treatments are not the same. I have recently seen a patient who was treated at intervals of six weeks even at the start. Physical examination disclosed that there was absolutely no collapse or compression of the lung and also that the infection was so slight that artificial pneumothorax would probably be harmful rather than of any benefit. Another patient came to me with a history of having taken pneumothorax for three months. She stated that she took the treatment (at her physician's advice) every five or six weeks. No air could be demonstrated in the treated pleural cavity, and the lung was full of large, bubbling râles. The history showed that the patient was toxic, with continual fever, and the expectoration was large in amount and purulent.

In those patients in whom I have effected a partial collapse and been obliged to stop for some reason, I have noticed almost without exception that a cavity would develop in the compressed area. This cavitation I believe was due to a lowered resistance of the cells in the compressed area from the pressure. When the lung reexpanded, the cells, owing to altered circulation, etc., were unable to take care of the infection. In other words, there was a mechanical injury of the cells in the compressed area. Another danger in these cases that are not collapsed sufficiently is adherent pleura which may prevent further collapse.

It has been shown that about 50 c.c. of atmospheric air is absorbed by the pleura in twenty-four hours. Taking this fact into consideration, it is a matter of mathematics to determine how often to give the treatment in the majority of cases. It is obvious that many physicians are not using this treatment properly when, after two or three treatments, they allow an interval of one month to elapse. It is evident that the lung is being exercised more and injured more than if there were no interference whatever.

The object of artificial pneumothorax treatment is to close up ulcerating areas, thereby decreasing pus formation, cough and toxemia. If we are to do this permanently we must keep constant pressure on the lung. In this way a marked fibrosis results, as has been shown at necropsy. This pressure must be kept up just as long as is possible. In selecting the case for treatment by artificial pneumothorax we must observe our prospective pneumothorax patient long enough to be confident that he will not get better with the usual treatment. We must feel that the compressed lung will not function for the rest of the patient's life if the results of artificial pneumothorax are to be what they should. After the physician has selected his patient, he should give the treatment just as often and in such amount as to obtain a compression in the shortest time and most aseptic manner possible. The manometer and fluoroscope must be his constant guide.

A procedure that I have found effective is to give 350 c.c. at the first treatment and then give the second treatment of from 400 to 500 c.c. on the third day. I then increase the interval between instillations one day until the patient is taking the treatment once a week. I continue this weekly treatment for at least six months, and then give one every ten days. The amount to be given after the second instillation will depend on the manometric reading and the fluoroscopic findings. Gradually positive pressure must be obtained even if there is some displacement of diaphragm and mediastinum; but marked embarrassment of respiration must be avoided and the patient must have absolute rest for twenty-four hours following treatments.

Herbert F. Gammons, M.D., Dallas, Texas.
Superintendent, Woodlawn Sanatorium.

"CHRONIC PELVIC PERITONITIS OF UNKNOWN ETIOLOGY OCCURRING IN WOMEN"

To the Editor:—In The Journal, Jan. 8, 1921, p. 127, Dr. Stein, in referring to my article on "Chronic Pelvic Peritonitis of Unknown Origin Occurring in Women," makes the suggestion that we are dealing with a congenital anomaly similar to the condition known as Jackson's membrane. While it is possible that the disease described in my article may be due to peritoneal reduplications, still, the condition encountered in the pelvis was quite different from the veil-like membranes that represent these developmental variations. The adhesions were firm, filled the pelvis, closed the tubal orifices, extended diffusely over the culdesac, and did not follow any definite line that would enable one to deduce that we are dealing with peritoneal anomalies. They resembled accurately the type of lesion seen in chronic inflammatory or irritative processes.

As to the possibility that Dr. Sturmdorf suggested, while it may be true that the cervical mucosa is inflamed, we were unable to demonstrate such a lesion histologically, bacteriologically or clinically in these cases.

Samuel H. Geist, M.D., New York.

BLOODLESS AMPUTATION AT THE HIP JOINT

To the Editor:—In the report of a case of "Exarticulation of the Hip Joint" in The Journal, Jan. 8, 1921, Dr. Barney Brooks writes:

> The disadvantage of any tourniquet method is that the tourniquet is inconvenient and insecure during the operation if an attempt is made to amputate the soft parts very near the pelvic girdle.

This conclusion is not in accord with the experience of a large number of the most expert technicians and greatest surgeons of our time, nor is it in accord with the facts as demonstrated in hundreds of cases of amputations at the hip as devised by me and made public before the American Medical Association in 1890. The exsanguination of the part to be removed (as the conditions may permit), the insertion of the security pins and the application of the constricting rubber tube is a technic so simple and so secure that a tyro may successfully undertake it, and the point of constriction can be so far removed from the operative field as to offer no possible obstruction to disarticulation. Soon after my method was made public, I was invited by Prof. W. W. Keen to demonstrate it before his class at the Jefferson Hospital. The patient, a woman, well advanced in pregnancy, had a thigh of such unusual size that it not only tested the successful con-

striction but necessitated the highest possible application of the tube. The operation was bloodless and (as the woman went to full term) so satisfactory to Professor Keen that in reporting the case, he said:

> It was reserved for an American surgeon to devise what is undoubtedly the best method, and in fact which I think we can now call the only method of hemostasis in amputation of the hip joint.

In the *Annals of Surgery*, September, 1895, Prof. John F. Erdmann submits a series of eighteen hip joint amputations performed in seven of the leading New York hospitals in the period from January, 1884, to January, 1895, with a mortality ratio of 44.4 per cent. Seven of these operations were by my method, and all the patients recovered. The death rate in the remaining group was 72.7 per cent. In addition to these performed by myself, I have received reports from many hundreds of operations by this method, and in no single instance has any objection been made of the difficulty of applying the hemostatic apparatus or of its failure to control bleeding, or of any postoperative effects due to pressure. With such results how may we justify opening into the cavity of the abdomen to tie or even compress the iliac artery?

JOHN A. WYETH, M.D., New York.

[A copy of Dr. Wyeth's letter was referred to Dr. Brooks, who writes:]

To the Editor:—If the paragraph which Dr. Wyeth quotes is to be isolated from the remainder of the publication, then the last clause should be given special emphasis:

"The disadvantage of any tourniquet method is that the tourniquet is inconvenient and insecure, *if an attempt is made to amputate the soft parts near the pelvic girdle.*"

The real point is that the conventional term "hip joint amputation" is used to refer to any thigh amputation which includes the removal of the entire femur, and the level at which the skin, muscles and fascia are divided is not considered.

I should entirely agree with Dr. Wyeth that in the operation of "hip joint amputation," as ordinarily performed, in which the amputation of the soft parts leaves the proximal ends of the long muscles of the thigh unamputated, his method of hemostasis is quite satisfactory. If, however, the operator desires to amputate the muscles of the thigh at their origins from the pelvic girdle, any tourniquet which encircles the thigh would be inconvenient and insecure.

BARNEY BROOKS, M.D., St. Louis.

"AN IMPROVED URETHRAL INSTILLATING SYRINGE"

To the Editor:—In connection with Dr. Moore's suggestion (THE JOURNAL, Jan. 15, 1921, p. 176) for an improved urethral instillating syringe, allow me to offer the observation that the ordinary adapter provided for Luer syringes will screw into the regular Keyes silver cannula and thus provide a satisfactory means of employing an all glass syringe for urethral instillations.

FRED Z. HAVENS, M.D., Waupun, Wis.

Diet in Tuberculosis.—Two terms are of special importance in considering the diet of a tuberculous patient; these terms are production ration and maintenance ration. It is desirable to think of these terms, and indeed in these terms, when we consider, say, the growth of a young child, the well-being of a pregnant mother, the needs of the mother and the child when the child is at the breast, and also the welfare of a patient suffering from tubercle. In each case there must be given a maintenance ration to neutralize ordinary waste and produce ordinary energy, and an excess or production ration which will supply material for growth or meet the needs of special waste.—H. deC. Woodcock, *Lancet*, Oct. 23, 1920.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

TREATMENT OF ENURESIS

To the Editor:—Please give me some information in regard to treatment for bedwetting in children. I have tried the usual remedies without success. Kindly withhold my name from publication.

B. J. G., Georgia.

ANSWER.—Enuresis is usually the result of disturbance of bladder function, and occurs either as a symptom of some other disease or as an independent disorder. It may be due to cerebrospinal involvement or to some pathologic disorder of the bladder, urinary tubes or genitalia. In some instances, severe metabolic diseases disturb bladder function. These conditions are easily recognized, and the treatment is directed toward the pathologic state that is producing the disordered bladder function. Ordinary bedwetting, when organic disease can be excluded, is classified as a neurosis of the bladder. It occurs most frequently during sleep, though it may occur during the daily nap or during the waking hours.

Many methods of treatment have been suggested. One plan seems to give one physician brilliant results, whereas the same treatment fails in other hands. There can be no doubt that suggestion plays an important part in the treatment. A general outline of treatment may be discussed:

1. General Management; Diet: Great quantities of vegetables, particularly potatoes, should be avoided. The amount of fluid intake should be diminished. The patient may be permitted to take meat, fat, carbohydrates and farinaceous food. To forbid a moderate amount of water in the evening or at bedtime is without result. Older children should be taught regularity in emptying the bladder during the day. At definite times the bladder should be emptied—five or six times daily. The child should be awakened about an hour after retiring and once or twice later on during the night to empty the bladder (this usually without result). The child should lie with his head low and his pelvis high, or the foot of the bed should be raised. The child may have sitz-baths of tepid or cold water every other day. Hydrotherapeutic courses, packs, or swimming may be tried. Change of environment, sea baths, a stay in the mountains, and sanatorium treatment are helpful. Exercise and sports are employed as general therapeutic remedies. Grover of Boston has suggested rest-cure treatment.

2. Medicinal Treatment: It is not known that any particular drug acts as a specific. If the physician exercises sufficient suggestive power over his patient he may be able to effect a cure with a placebo. Drugs that are used are: tincture of belladonna in generally increasing drop doses; atropin sulphate (the dosage may be found in Holt); strychnin sulphate, from $\frac{1}{150}$ to $\frac{1}{500}$ grain three times a day; antipyrin; bromids under certain conditions; hexamethylenamin, and ergot.

3. Electrical Treatment: As ordinarily employed, this is harmless and has a definite suggestive value. It seems to make little difference whether one uses the faradic or galvanic stream or alternating currents. One may apply the flat electrode over the symphysis pubis and the knob-formed electrode over the perineum, or the flat electrode may be placed over the perineum and the roller electrode applied to the bladder region. The metal electrode may be introduced into the rectum for a considerable distance and then another electrode placed over the bladder region. One should not introduce an electrode into the bladder for the supposed purpose of strengthening the sphincter muscles of the bladder, on account of the danger of infection. The dosage of the electric current should be regulated so as to be just slightly uncomfortable. It should not, however, be painful. Electricity should be employed for only a few moments at a time. If a slight suggestion of pain is felt, the patient may be given to understand that unless a cure results a stronger current must be employed. If results are to be obtained from electrical treatment they must be obtained soon. If after one or two months' treatment three times weekly no result has been obtained, the kind of electricity employed should be changed.

Local massage is worthy of trial.

4. Local Treatments of the Bladder: Bladder treatments such as are employed in adults are sometimes tried. The bladder may be filled with increasing quantities of warm fluid, such as boric acid solution or potassium permanganate solution. The results from this form of treatment are altogether

uncertain, and the procedure is mentioned here only to be condemned. The introduction of sounds is an old form of treatment and also has a suggestive value. This treatment, however, is altogether too heroic and too dangerous to deserve approbation. Various local surgical procedures have been employed. Operations for phimosis, hypospadias, epithelial adhesions of the vulva, etc., have acted as powerful suggestive remedies and sometimes have been successful.

5. Epidural Injections: With a small needle the membrane lying between the sacrum and the coccyx may be punctured and physiologic sodium chlorid solution or 0.5 per cent. procain solution may be injected. A result usually occurs after several injections. The procedure is harmless. A number of cases of nervous bladder disturbance which have resisted every other form of treatment have been cured by this procedure. It may be tried in obstinate cases.

Thyroid extract in appropriate doses has been used without any permanent or general results.

6. Apparatus for Temporary Occlusion of the Urethra: The urethra is temporarily closed by an apparatus so that the patient awakens because the desire to urinate causes pain and discomfort. This method is particularly useful in older persons and has been used extensively by young soldiers. Its employment in children is not advisable.

7. Hypnosis: There can be no doubt that a certain number of cases can be cured by hypnotizing the patient. The treatment should be employed only by experienced physicians. If, however, after several treatments no result is obtained, this form of treatment should be discontinued.

The treatment is therefore that of a neurosis, and the cure depends on the power of suggestion. The parents should be asked to cooperate in the suggestive treatment. They must not sympathize with the patient or lend encouragement to his supposed infirmity. The personality of the physician and the cooperation of the patient and family, are frequently the most powerful agents in curing this neurosis.

BENZYL BENZOATE IN PERTUSSIS

To the Editor:—Please give me references to the use of benzyl benzoate in whooping cough. T. S. HUGGARD, M.D., West Point, Iowa.

ANSWER.—McMurray, (Benzyl Benzoate Treatment of Whooping Cough, *New York M. J.* **112**:122 [July 24] 1920; abstr., THE JOURNAL, Aug. 7, 1920, p. 433) used benzyl benzoate in whooping cough and reported satisfactory results. Macht (*Bull. Johns Hopkins Hosp.* **31**:236 [July] 1920; abstr., THE JOURNAL, Aug. 28, 1920, p. 633) administered benzyl benzoate to 115 children afflicted with whooping cough. He believed that 90 per cent. of the patients showed more or less beneficial effects, that 50 per cent. exhibited improvement in the symptoms, and that the therapeutic effects were not curative but distinctly of a palliative nature. No other evidence has yet been published so far as we can discover.

BULLETINS OF THE NATIONAL RESEARCH COUNCIL

To the Editor:—I note an item in THE JOURNAL, July 24, 1920, p. 253, concerning the National Research Council listing 300 laboratories in which research work is carried on in the United States. Where can I procure a bulletin issued by the National Research Council?

E. D. HATCHER, Nevada, Mo.

ANSWER.—The National Research Council has its headquarters at Washington, D. C. (1701 Massachusetts Avenue). The bulletin on the industrial research laboratories issued by it may be obtained by applying to the council. The price is one dollar. This bulletin is one of a series which is regularly issued by the council at a subscription price of five dollars per volume, each volume including approximately 500 pages.

PHYSICIAN'S INCOME TAX

To the Editor:—Please answer the following questions for me relative to income tax returns:

1. Are physicians allowed exemptions for money expended in attending medical conventions or meetings, the A. M. A. session, for example?
2. Is the sum paid as dues in various medical societies legitimate expense?
3. Can money paid for medical publications be exempted?

R. A. BOWDLE, M.D., East Ely, Neb.

ANSWER.—1. Physicians may deduct railroad and Pullman fares for attending meetings of professional organizations.

2. Dues for medical societies are legitimate expenses and may be deducted.

3. Subscriptions to medical journals are a current expense and may be deducted. The purchase of books, however, is an investment and may not be deducted.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 1. Sec., Dr. Harry C. Vighne, Juneau.
CALIFORNIA: Los Angeles, Feb. 14-17. Sec., Dr. Charles B. Pinkham, 127 Butler Bldg., San Francisco.
CONNECTICUT: Hartford and New Haven, March 8-9. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, New Haven. Sec., Eclectic Bd., Dr. James E. Hair, 730 State St., Bridgeport.
KANSAS: Topeka, Feb. 8. Sec., Dr. Henry A. Dykes, Lebanon.
MAINE: Portland, March 8-9. Sec., Dr. Frank W. Searle, 140 Pine St., Portland.
MASSACHUSETTS: Boston, March 8-10. Sec., Dr. Walter P. Bowers, Rm. 144, State House, Boston.
NATIONAL BOARD OF MEDICAL EXAMINERS, St. Paul, Minneapolis and Rochester, Minn., Feb. 23-March 2. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.
NEW HAMPSHIRE: Concord, March 10-11. Sec., Dr. Charles Duncan, Concord.
VERMONT: Burlington, Feb. 8-10. Sec., Dr. W. Scott Nay, Underhill.
WYOMING: Cheyenne, Feb. 7-9. Sec., Dr. J. D. Shingle, Cheyenne.

MEDICAL EDUCATION IN CHINA

Recent reports state that in all China there are found to be less than 2,000 physicians. What a small proportion of the population of 400,000,000 Chinese people can receive scientific treatment in case of illness or injury! In an effort to ascertain the exact number of students looking toward medicine, if not also to stimulate the youth of China to look toward the practice of medicine, a survey has recently been made of the middle schools of China. In 153 of the institutions reporting, there are 36,095 students, and of these 1,153 stated that they were planning to study medicine. Since this is only about 20 per cent. of all middle schools, the total number who may enter on the study of medicine will be considerably larger.

The Rockefeller Foundation is said[1] to have abandoned its purpose of erecting at Shanghai a great medical school similar to the Union Medical College at Peking. This decision is said to be due to the fact that in its initial session the college had a class of only seven students, although $6,000,000 had been expended for its construction and maintenance. This small attendance is said to be due to the fact that the medical course is given in the English language and that only a small number of the universities and schools in the neighborhood of Peking emphasize their courses in English. The situation is said to be quite different at Shanghai, where English is more generally taught, which will insure larger numbers of Chinese medical students.

In order to provide a clear field when a large medical school in Shanghai was planned by the Foundation, the Harvard Medical School of China was purchased by the Chinese Medical Board, and the Pennsylvania Medical School at Shanghai consented to step aside in favor of the larger institution. A few months ago, however, after the Foundation withdrew from the field, the Pennsylvania Medical School began pushing forward its plans to enlarge its plant. The erection of a science laboratory building, to cost $100,000, was promptly begun. This will house departments of physics, chemistry and biology and, temporarily, the medical laboratories also, but the latter will be removed to other buildings which will be erected later. The institution will provide a premedical course covering three years, and a medical course of four years similar in standard to those established by the Peking Union Medical College.

Connecticut Homeopathic November Reciprocity Examination

Dr. Edwin C. M. Hall, secretary, Connecticut Homeopathic Medical Examining Board, reports two candidates licensed by reciprocity at the meeting held at New Haven, Nov. 9-10, 1920. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Boston University School of Medicine		(1904)	Mass.
New York Homeo. Med. Coll. and Flower Hosp.		(1918)	New York

1. National Medical Journal of China, September, 1920, p. 216.

New Jersey October Examination

Dr. Alexander Macalister, secretary, New Jersey State Board of Medical Examiners, reports the written examination held at Trenton, Oct. 19-20, 1920. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Five candidates, including 2 osteopaths, were examined, all of whom passed. Thirty-seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Maryland		(1919)	87.2
University of Pennsylvania		(1917)	80.5
Woman's Medical College of Pennsylvania		(1919)	87.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University		(1919)	Dist. Colum.
Loyola University School of Medicine		(1918)	Mass.
University of Illinois		(1919)	New York
College of Physicians and Surgeons, Baltimore		(1904)	Illinois
University of Maryland School of Medicine		(1903)	W. Virginia
Maryland Medical College		(1903)	W. Virginia
Tufts College Medical School		(1917)	Mass.
Bellevue Hospital Medical College		(1897)	New York
Columbia University		(1917), (1918), (1919, 2)	New York
Cornell University Medical College		(1913)	New York
Fordham University School of Medicine		(1918), (1919)	New York
Long Island College Hospital		(1894) Florida, (1919)	New York
New York Homeo. Med. Coll. and Flower Hosp.		(1919)	New York
New York Homeo. Med. Coll. and Hospital		(1904)	New York
Syracuse University		(1919)	New York
University and Bellevue Hosp. Med. Coll.		(1919, 3)	New York
Leonard Medical School		(1901)	N. Carolina
Ohio State University Coll. of Medicine		(1913)	Ohio
Starling-Ohio Medical College		(1914)	Ohio
Medico-Chirurgical Coll. of Philadelphia		(1896)	Penna.
Temple University		(1918)	Delaware
University of Pennsylvania	(1899) Pennsylvania,	(1900)	Mass.
Vanderbilt University		(1917)	Tennessee
University of Vermont Coll. of Medicine	(1899),	(1913)	Vermont
Queen's Univ. Fac. of Med., Kingston.	(1906) Va.,	(1912)	New York
University of Palermo		(1890)	New York
Syrian Protestant Coll., Beirut		(1914)*	New York

* Graduation not verified.

Tennessee June Examination

Dr. Alfred B. DeLoach, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Memphis, Nashville and Knoxville, June 11-12, 1920. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. Eighty-two candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College		(1910)*	75.9
Illinois Medical College		(1910)	75
Northwestern University	(1920)** 79.9,	(1920)**	89.1
Rush Medical College	(1915) 86,	(1917)	88
Tulane University of Louisiana	(1913) 95.5,	(1919) 84.4,	88.4
Johns Hopkins University		(1904)	83.6
University of Maryland		(1915)	89
Harvard University	(1912) 87.5,	(1915) 91.6, (1920)	90.6
Columbia University	(1915) 91.8,	(1920)	89.3
New York Homeo. Med. Coll. and Flower Hospital		(1914)	83.8
Jefferson Medical College	(1905) 75,	(1920) 89.9,	91
Meharry Medical College	(1919) 85.5, (1920) 76, 77.6, 78.4, 78.5, 78.8, 80.5, 80.9, 81.3, 82.4, 82.4, 82.5, 83, 83.1, 83.4, 84.5, 84.8, 84.9, 85, 85.1, 88.1		
Memphis Hospital Medical College		(1908)	81.8
University of Chattanooga		(1920)	81.6
University of Nashville		(1905)	82.6
University of Tennessee	(1894) 78.4, (1916) 85.4, (1920) 83.9, 86.1, 87.9, 88.6, 89.3		80.4
Vanderbilt University	(1920) 81.4, 82.8, 83.6, 83.6, 84.4, 84.6, 85.1, 85.3, 85.6, 85.6, 85.8, 86, 86.1, 86.3, 86.4, 86.5, 86.6, 86.9, 86.9, 87, 87.1, 87.1, 87.6, 87.6, 88.5, 88.8, 89.1, 90.3		
University of Virginia	(1915) 90,	(1920)	89.3

* Graduation not verified.

** Diploma withheld until 1921, pending completion of hospital internship.

Utah October Examination

Dr. C. L. Olsen, acting secretary, Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, Oct. 4-5, 1920. The examination covered 17 subjects and included 100 questions. An average of 75 per cent. was required to pass. Seven candidates, including 2 osteopaths, took the physicians and surgeon's examination, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Illinois		(1920)	84.5
St. Louis University School of Medicine		(1914)	84.8
John A. Creighton Medical College		(1920)	88.1
Western Reserve University School		(1920)	84.1
Jefferson Medical College		(1919)	83.3

Book Notices

THE FUNDAMENTALS OF HUMAN ANATOMY, INCLUDING ITS BORDER-LAND DISTRICTS FROM THE VIEWPOINT OF A PRACTITIONER. By Marsh Pitzman, A.B., M.D., Professor of Anatomy in the Dental Department of Washington University, St. Louis. Cloth. Price, $4. Pp. 356, with 101 illustrations. St. Louis: C. V. Mosby Company, 1920.

The preface indicates that this book is intended for use as a dissecting manual and introductory text by students, and as a text by practitioners who ought to know more anatomy. The author is a teacher of anatomy in a dental college, and finds the ordinary textbooks too large and encyclopedic. He finds too much detail in the dissecting manuals also. He has therefore written a "modern textbook of anatomy," much briefer, and limited to the "fundamentals" considered from the point of view of a practitioner. "Practical" paragraphs are introduced, and "sufficient directions" for dissection are included. The style is colloquial, and the Latin terms employed have not always their proper forms. It is quite brief. Part I, systemic anatomy, covering all the "systems," skeletal, muscular, nervous, vascular, etc., is completed in thirty-eight pages, and Part II, regional anatomy, in 279 pages. The extent to which details are omitted may be seen in an example. The portal vein is said to be formed by the union of veins corresponding to the celiac axis and the superior and inferior mesenteric arteries; but its formation by the junction of the splenic and superior mesenteric veins is not mentioned, nor do the names of the latter appear definitely in the book. The directions for dissection state simply that "the arteries and veins (of the abdomen) should be dissected" (p. 193). Medical students and practitioners will find it insufficient either as a dissecting manual or as a textbook. The author's fear that attempt by the student to master too much detail may result in confusion has been unnecessarily great, so far as they are concerned. It would be a good book for use by students whose need of detailed knowledge is less insistent than theirs, if it were free of inaccuracies. Its reliability may be judged from the following statements:

A water blister following a superficial burn is a collection of fluid between the epidermis and dermis (p. 27).

Groups of "synovial glands" lie in the recesses of the joint cavities, (p. 50).

The small intestine has no glands (except liver and pancreas, p. 175).

The cartilage about the vault of the skull first turns into fibrocartilage before any bone is deposited. This is known as the intramembranous type of bone development (p. 264).

The fornix is continuous at both extremities with the corpus callosum (p. 300).

A branch from the facial nerve nucleus of the brain stem makes its exit through the foramen ovale in company with the mandibular division of the trigeminal, carrying the motor supply to the muscles of mastication (p. 325).

The diagram on page 191 shows the azygos vein crossing over to the left side. The diagram on page 300 mistakes the massa intermedia for the foramen interventriculare of Monro.

SCURVY: PAST AND PRESENT. By Alfred F. Hess, M.D., Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College, New York City. Cloth. Price, $4 net. Pp. 279, with illustrations. Philadelphia: J. B. Lippincott Company, 1920.

For many reasons it is fortunate that the science of nutrition had taken on active growth before the outbreak of the World War. Not only did our recently acquired knowledge furnish information that was of inestimable value in maintaining the health of our armies, but it was of special value in the handling of the widespread effects of protracted defective nourishment in the civilian population. Reciprocally, an enormous amount of clinical material was furnished to extend and amplify the experimental observations, and as a result the already active interest in the problems of nutrition received an acute stimulation which resulted in an otherwise unapproachable rate of progress. A monograph on the subject of scurvy is, therefore, most timely, especially when prepared by so competent and industrious a student of this disease as Dr. Hess. The last comprehensive treatise on scurvy in English was published by Lind in 1772, so the field is open, to say the least. Scurvy is a topic that permits of most interesting literary treatment, bound up as it is with the stories of all the wars, explorations and famines of history

to furnish a fascinating background, while in the foreground is the large mass of recent active laboratory and clinical research, with its fruitful yields and continued progress. Dr. Hess has not failed to take advantage of his favorable opportunity, and the book never lacks interest, from the picturesque material of the historical introduction to the closing discussion of the relation of scurvy to other diseases. It is readable throughout, and can be warmly recommended as an enjoyable as well as a profitable piece of medical reading for physicians of whatever training or special interest; for scurvy represents merely one of the manifestations of defective alimentation, and undoubtedly many less definite and outspoken conditions of ill health depend on imperfect provision for properly balanced and selected nourishment. A full bibliography also assures the book a place in the reference library of both the laboratory and the clinical investigator. All features of the disease are considered, historical, clinical, experimental, as well as the pathology, prognosis, diagnosis and treatment. Attention is called to the fact that with scurvy, as with the rest of the diseases dependent on partially defective nutrition, although leading facts have been known for centuries, decided advances have been made only in the last few years, through the application of experimental methods in laboratory and clinic from a rigid quantitative standpoint.

GENERAL MEDICINE. Edited by Frank Billings, M.S., M.D., Head of Medical Department, Rush Medical College, with the Collaboration of Burrell O. Raulston, A.M., M.D., Assistant Attending Physician, Presbyterian Hospital. Cloth. Price, $2.50. Pp. 624, with illustrations. Chicago: Year Book Publishers, 1920.

GENERAL SURGERY. Edited by Albert J. Ochsner, M.D., F.R.M.S., LL.D., Professor of Surgery in the Medical Department of the State University of Illinois. Cloth. Price, $2.50. Pp. 620, with 223 illustrations. Chicago: The Year Book Publishers, 1920.

PEDIATRICS. Edited by Isaac A. Abt, M.D., Professor of Pediatrics, Northwestern University Medical School, with the Collaboration of A. Levinson, M.D., Associate Pediatrician, Michael Reese Hospital, Orthopedic Surgery. Edited by Edwin W. Ryerson, M.D., Associate Professor of Surgery (Orthopedic) Rush Medical College with the Collaboration of Robert O. Ritter, M.D., Associate Attending Orthopedic Surgeon, Children's Memorial Hospital. Cloth. Price, $1.75. Pp. 256, with 32 illustrations. Chicago: The Year Book Publishers, 1920.

These books follow the same style as in previous years. They represent a selection of articles of importance in the various specialties, the preparation of suitable abstracts, and the insertion of editorial additions or comments when such seem to be required.

Volume 1, on internal medicine, covers the field under the usual headings. Dr. Billings, in discussing the use of nonspecific proteins concludes in laconic style:

> The result of the treatment in typhoid fever, pneumonia and other acute infections and in chronic diseases is not constant. The modus operandi of the treatment is not understood. The method is not free from danger. If used, the doses should be small and the risk should not be taken without due deliberation.

In discussing pneumonia, he points out that actual evidence exists only in favor of Type I antipneumococcus serum. Those physicians who wish a collection of good abstracts of the literature of internal medicine for the year 1920 will find them in this book.

The volume on surgery, edited by Dr. Ochsner, is well illustrated and is unusually profuse in the number of editorial comments; this greatly enhances the value of the book.

In Volume 4, Dr. Abt edits pediatrics, and Dr. Ryerson the allied subject of orthopedic surgery. The pediatrics editor does not hesitate to point out faults in several of the articles abstracted. The section on orthopedic surgery is illustrated with charts and roentgenograms.

RADIOLOGIE DES VAISSEAUX DE LA BASE DU CŒUR. Par H. Vaquez, Professeur à la Faculté de Paris, and E. Bordet, Chef de Laboratoire à la Faculté de Médecine de Paris. Paper. Price, 25 francs. Pp. 252, with 247 illustrations. Paris: J. B. Baillière & Fils, 1920.

The three editions of the earlier volume by Vaquez and Bordet on the radiology of the heart and the aorta have already received favorable comment in the pages of THE JOURNAL. This book may be regarded as the continuation and the final chapter of the earlier work. To the casual reader it may seem that the authors have devoted more attention than the subject warrants to the discussion of a comparatively trivial topic. But the arch of the aorta, and the other neighboring vessels are of great clinical importance. And as we note the valuable information obtained by the careful scrutiny of the minute details of roentgenograms of these parts, particularly if the plates are taken at various angles, if accurate measurements are made, and if findings thus discovered are interpreted in the light of the clinical history and physical examination, we realize that the thorough study of this limited region is well worth while. Many of the facts enunciated are based on experimental work on cadavers. Postmortem checking up on clinical and roentgenographic diagnoses has also played an important part. The book is decidedly helpful; and of not minor importance are the many illustrations.

A TEXT-BOOK OF PATHOLOGY. By W. G. MacCallum, Professor of Pathology and Bacteriology, The Johns Hopkins University, Baltimore. Second edition. Cloth. Price, $10 net. Pp. 1155, with 575 illustrations. Philadelphia: W. B. Saunders Company, 1920.

As pointed out in the preface, the exigencies of war turned the attention of pathologists particularly to the study of infectious diseases, those caused by animal parasites, and the effects of wounds, poisonous gases and malnutrition. In this edition, the author has attempted to follow these advances by the insertion of paragraphs summarizing new work or by rewriting whole chapters. Particular attention has been given to the sections on shock, acid-base equilibrium, hydrocephalus, immunity in tuberculosis, meningococcal infections, pneumonia after measles, influenza, cholera and leprosy. The illustrations have been modified and new ones inserted. Following each chapter is a table of references to the literature, several references to publications issued during 1919, assuring the reader that the publication is up to date. The extent of revision may be estimated by the fact that the first edition contained 1,085 pages while the present edition contains 1,155.

THE DUODENAL TUBE AND ITS POSSIBILITIES. By Max Einhorn, M.D., Professor of Medicine at the New York Postgraduate Medical School. Cloth. Price, $2.50 net. Pp. 122, with illustrations. Philadelphia: W. B. Saunders Company, 1920.

This summarizes the numerous published papers by the author. The indications for the use of the duodenal tube and measures to facilitate its passage, as well as an analysis of duodenal contents thus obtained, are thoroughly considered. Full details are given for duodenal methods of feedings and for duodenal instillation of remedies. This work has served as a basis for the recent interesting work on diagnosis and treatment of diseases of the biliary tract, especially the nonsurgical drainage of the gallbladder. The book is clearly written, and should be a useful guide to those who are interested in this procedure.

HIGH FREQUENCY APPARATUS: Design, Construction and Practical Application. A Practical Treatise for Electrical Engineers, Electricians, Physicians, Students and Experimenters. Covers the Design and Construction of all Kinds of High Frequency Apparatus for Use in Experimental, Medical and Plant Cultivation Work. Includes also directions for the Construction of a Complete Stage Outfit for Both Low and High Potential Work. By Thomas Stanley Curtis. Second edition. Cloth. Price, $3. Pp. 269, with illustrations. New York: Norman W. Henley Publishing Company, 1920.

This volume would appeal to any one who contemplates constructing a high frequency apparatus. The book is well supplied with diagrams and formulas for building different units. There are some interesting chapters on plant culture with high tension currents.

ELECTRICAL TREATMENT. By Wilfred Harris, M.D., F.R.C.P., Senior Physician and Lecturer on Neurology, St. Mary's Hospital, Maida Vale. Third edition. Cloth. Price, $3.50. Pp. 354, with illustrations. New York: William Wood and Company, 1920.

This is a small volume well adapted to the use of the physician who does not care to specialize in electrical treatment. The book deals largely with the use of faradic and galvanic electricity, and also of sinusoidal, high frequency and static electricity in the treatment of nervous diseases. The text is clear and concise and presents the subject in a sane manner, free from technical terms.

Medicolegal

Sale of Drugs by Physician Issuing Prescriptions

(Jin Fuey Moy v. United States (U. S.), Decided Dec. 6, 1920)

The Supreme Court of the United States says that each count of the indictment averred that the defendant, Jin Fuey Moy, was a practicing physician, and did unlawfully, wilfully, knowingly and feloniously sell, barter, exchange and give away certain derivatives and salts of opium, to wit, a specified quantity of morphin sulphate, to a person named, not in pursuance of a written order from such person on a form issued in blank for that purpose by the commissioner of internal revenue under the provisions of Section 2 of the Harrison Narcotic Law, "in manner following, to wit, that the said Jin Fuey Moy, at the time and place aforesaid, did issue and dispense" to the person named a certain prescription of which a copy was set forth, and that said person "was not then and there a patient of the said Jin Fuey Moy, and the said morphin sulphate was dispensed and distributed by the said Jin Fuey Moy not in the course of his professional practice only; contrary to the form of the act of Congress," etc. It was objected that the act of selling or giving away a drug and the act of issuing a prescription were so essentially different that to allege that the defendant sold the drug by issuing a prescription, for it amounted to a contradiction of terms, and the repugnance rendered the indictment fatally defective. The government suggested that the clause as to issuing the prescription might be rejected as surplusage; but the court is inclined to think that it enters so intimately into the description of the offense intended to be charged that it cannot be eliminated, and that unless the defendant could "sell," in a criminal sense, by issuing a prescription, the indictment was bad. If "selling" must be confirmed to a parting with one's own property, there might be difficulty. But by Section 332 of the Criminal Code, "Whoever directly commits any act constituting an offense defined in any law of the United States, or aids, abets, counsels, commands, induces, or procures its commission, is a principal." Taking this together with the provisions of Section 2 of the narcotic laws it is easy to see, and the evidence in this case demonstrated, that one may take a principal part in a prohibited sale of an opium derivative belonging to another person by unlawfully issuing a prescription to the would-be purchaser. Hence there is no necessary repugnance between prescribing and selling, and the indictment must be sustained.

The evidence showed that the defendant was a practicing physician in Pittsburgh, registered under the act so as to be allowed to dispense or distribute opium and its derivatives without a written order in official form, "in the course of his professional practice only"; that he was in the habit of issuing prescriptions for morphin sulphate without such written order and not in the ordinary course of professional practice; that he issued them to persons not his patients and not previously known to him, professed morphin users, for the mere purpose, as the jury might find, of enabling such persons to continue the use of the drug, or to sell it to others. In some cases he made a superficial physical examination; in others, none at all. His prescriptions called for large quantities of morphin—from 8 to 16 drams at a time—to be used "as directed," while the directions left the recipient free to use the drug virtually as he pleased. His charges were not according to the usual practice of medical men, but according to the amount of the drug prescribed, being invariably one dollar per dram. All the prescriptions were filled at a single drug store, the recipients being sent there by the defendant for the purpose; while persons inquiring at that drug store for morphin were sent to the defendant for a prescription. The circumstances strongly tended to show cooperation between the defendant and the proprietors of the drug store. At and about the dates specified in the indictment—the spring of the year 1917—and for more than two years before, the number of prescriptions issued by the defendant and filled at that drug store ran into the hundreds each month, all calling for morphin sulphate or morphin tablets in large quantities. In each case in which the defendant was found guilty, the evidence fully warranted the jury in finding that he aided, abetted and procured a sale of morphin sulphate without a written order on a blank form issued by the commissioner of internal revenue; and that he did this by means of a prescription issued not to a patient and not in the course of his professional practice, contrary to the prohibition of Section 2. Manifestly the phrases "to a patient" and "in the course of his professional practice only" are intended to confine the immunity of a registered physician, in dispensing the narcotic drugs mentioned in the act, strictly within the appropriate bounds of a physician's professional practice, and not to extend it to include a sale to a dealer or a distribution intended to cater to the appetite or satisfy the craving of one addicted to the use of the drug. A "prescription" issued for either of the latter purposes protects neither the physician who issues it nor the dealer who knowingly accepts and fills it.

The judgment of conviction under review is affirmed.

Courts Favor Prophylactic Measures

(Hanzal et al. v. City of San Antonio et al. (Texas), 221 S. W. R. 237)

The Court of Civil Appeals of Texas says that this is the day of prophylaxis, and the highest and best efforts of men are marshaled to prevent disease and preserve health, rather than to await the approach of the forces of disease and death and then use efforts to destroy and annihilate them. Courts are lending their approval to such advanced humanitarian ideas, and giving full force and effect, whenever practical and in consonance with enlightened construction of constitutional provisions, to sanitary laws. The sordid interest of the individual must give way when it becomes necessary to conserve and protect the health of the people, which has been aptly termed the most valuable economic asset and greatest social blessing that can be secured to any government. Health regulations being of such vital importance to any community must, if reasonable and impartial, be submitted to by individuals for the public good and general welfare. The state cannot, by reason of the vastness of demands made on it, and the complexities of local situations and exigencies constantly arising, supervise and superintend on all occasions; and courts, recognizing the necessity for it, have held uniformly that the power granted to municipalities and other agencies of government to prescribe rules for the prevention of disease and the preservation of health is not a delegation of legislative authority which is prohibited by the constitution. So, too, health authorities of municipalities are often empowered, and it is made their duty, to execute rules; and courts uniformly hold that it is not an improper delegation of legislative authority, to adopt and execute such rules as are expedient to prevent the spread of cholera, smallpox, yellow fever, scarlet fever, diphtheria and other communicable diseases. The law of necessity demands that the great majority must be protected at the expense of some of the rights of the individual. As to trades, callings and occupations, laws regulating and throwing restrictions about them in the interest of the public health are everywhere upheld and sustained, and where the validity of such laws is challenged it is no longer a question of authority to enact them, but whether the occupation, calling or business is one involving the public health. In this case, what the court sustains is the validity of a city ordinance regulating barber shops and the trade or occupation of barbering, for sanitary purposes and the protection of the health of the public. The state directly, or through any agencies created by it, has the power to use preventive means against such probable contagion, infection or communication of vile diseases, as might be imparted through careless or insanitary barbers. The commissioners of the city were invested with the authority to place the power of deciding what may be an "infectious, contagious or communicable disease" to its health officer; and this power of passing on the infectious, contagious or communicable nature of diseases was made the occasion to animadvert on the ability of "physicians of the so-called regular or allopathic school" to determine whether such contagion, infection or communicability exists. But the lack of knowledge as to the classification of diseases by the health officers will not be anticipated, but will be investigated if it should ever be presented.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

December, 1920, **160**, No. 6

*Experimental Studies in Diabetes: Internal Pancreatic Function in Relation to Body Mass and Metabolism. I. Alterations of Carbohydrate Assimilation by Removal of Portions of Pancreas. F. M. Allen, New York.—p. 781.

Diagnosis of Myxedema. J. M. Anders, Philadelphia.—p. 801.

*Influence of Protein Food on Increased Blood-Pressure. H. O. Mosenthal, New York.—p. 808.

*Management of Heart in Pneumonia. H. Brooks and J. Carroll, New York.—p. 815.

*Rôle of Electrocardiogram in Prognosis. J. D. Heard and G. E. Hein, Pittsburgh.—p. 828.

Negativity of Final Ventricular T Wave of Electrocardiogram. F. A. Willius, Rochester, Minn.—p. 844.

*Ileal Regurgitation, Nerves and Diet in Chronic Intestinal Invalid. J. Bryant, Boston.—p. 865.

*Significance of Small Amounts of Sugar in Urine. L. Kast, E. L. Wardell and V. C. Myers, New York.—p. 877.

Pathogenesis of Acute Leukemia: Report of a Case of Acute Myeloblastic Leukemia, with the Association or Complication of Vincent's Angina. M. Packard and E. P. Flood, New York.—p. 883.

*Contents of Stomach. E. J. Best, San Francisco.—p. 889.

Experimental Studies in Diabetes.—The first experiments of the series now reported on by Allen deal with the removal of various portions of the pancreas and observations of the tolerance for Merck's anhydrous glucose by stomach and by subcutaneous injection in 30 per cent. solution. It was found that dogs show an increased tendency to glycosuria from glucose given by stomach or subcutaneously when as little as a fourth or a third of the pancreas is removed. Apparently, therefore, the pancreas has little if any "margin of safety" from the standpoint of strictly normal metabolism, and there may be frequent occasions when its full endocrine function is needed for the purpose of fully normal assimilation. Quantities of sugar which exceed the normal assimilation may possibly be conceived as overtaxing the normal pancreatic function. The internal secretory potency of different parts of the pancreas is equal, as far as such tests can determine; but the influence of a given mass of tissue increases as the total mass of remaining tissue decreases. The "margin of safety" of the pancreas with regard to diabetes is large, amounting in the dog to at least seven eighths of the gland. The point at which diabetes begins is sharp and definite. The curve of lowering of tolerance, with removal of successive portions of pancreas, is approximately hyperbolic in form. The quantitative relations of the pancreatic hormone stands in some quantitative relation with the amount of carbohydrate metabolized, because a deficiency is revealed by moderate glucose dosage when only one fourth of the pancreas is removed, and because in diabetes the islands can be driven to destructive overfunction by carbohydrate excess and spared by regulation of diet. A more important quantitative relation is the minimum requirement of the body cells to prevent diabetes. When this minimum quantity of the hormone is present the organism retains its power to metabolize almost the whole of any glucose dosage that can be absorbed from the stomach or subcutaneous tissue, no matter how large or how long continued. When this minimum is reduced by only a trifle the phenomena of diabetes begin. With mild diabetes this deficit may be guarded against by restriction of carbohydrate. With more severe diabetes the total diet and body weight must be reduced. With still more severe diabetes the supply of hormone is inadequate for even the lowest metabolism and glycosuria is therefore uncontrollable even by fasting. Hopeless diabetes, uncontrollable by fasting, results (barring hypertrophy) when the remnant is about one twentieth of the pancreas. It seems evident that in the case of man a relatively small mass of normal island tissue can prevent diabetes, and the conclusion is therefore suggested that any positive means of augmenting the endocrine pancreatic function even by a little would give therapeutic results far surpassing those of the negative plan of sparing the function by diet.

Influence of Protein Food on Blood Pressure.—From Mosenthal's observations it would appear that it is exceptional for a low protein diet to diminish the blood pressure or a high protein diet to raise it.

Management of Heart in Pneumonia.—One of the most outstanding and striking facts in connection with pneumonia is that fatal cases terminate almost invariably with what appears clinically as a cardiac death. The predominating cardiac lesion in pneumonia is an inflammation or degeneration of the heart muscle. Brooks and Carroll believe that every case of pneumonia begins with a strain on the right heart, and that this strain is in amount that which justifies the conclusion that the paramount factor in prognosis of all forms of pneumonia lies here, and that on the ability of the right heart to resist the mechanical and toxic effects of the disease, mostly depends the fate of the patient. They believe further that small doses of digitalis at the outset of the infection enable the right heart to realize in the presence of an initial increased pulmonary pressure, a compensatory circulatory adjustment. Through this compensation at the onset the right heart in most instances is able to maintain an equilibrium. The best effects are obtained when the drug is given early in the disease and before the heart shows any evidence of incompetency. Brooks and Carroll give tincture of digitalis at the moment that the diagnosis is made or even when it is highly suppositious. The routine use of 5 minims of a good tincture by mouth, three or four times a day, is sound and efficient therapy. When the heart is crippled or subnormal, from 15 to 20 minims, every two or three hours, are given until the rate effect appears, the pulse becomes full, the muscle sound good and the apical thrust vigorous. If, then, the heart appears competent, the dose is reduced to 5 minims, every three hours or, perhaps, entirely discontinued. If signs of inordinate right heart strain appear or incompetency develops the dose is immediately increased. Rest, properly timed venesection, and numerous other adjuvant measures are frequently of great therapeutic utility.

Rôle of Electrocardiogram in Prognosis.—An attempt was made by Heard and Hein to assess the prognostic value of information derived from the study of electrocardiograms obtained from 560 patients whose hearts were beating under the domination of the normal pacemaker and at a rate which was approximately normal. A detailed report is made.

Ileal Regurgitation.—In unselected gastro-intestinal material, Bryant says, a frequency of from 20 to 30 per cent. of ileal regurgitation is to be expected. The patient with ileal regurgitation usually suffers from an increased intensity of any nervous irritability to which he may be liable, during the continuance of untreated ileal regurgitation. Immediate treatment of ileal regurgitation is by simple, bland, non-putrefying diet.

Significance of Slight Glycosuria.—It would appear from qualitative sugar observations on hourly specimens of urine, a few of which are given by Kast and others, that the results obtained with the usual qualitative tests made on specimens of urine taken at random, or even in the morning before breakfast, are quite misleading as regards the carbohydrate tolerance of the patient.

Studying Contents of Stomach.—A method is given by Best for the fractional stomach examination which makes it possible to complete all the tried tests of gastric study in two hours and gives connected pictures of the secretion during this period.

American Journal of Ophthalmology, Chicago

December, 1920, **3**, No. 12

Thrombosis of Retinal Veins After Influenza. E. Jackson, Denver.—p. 855.

Self Inflicted Conjunctivitis. H. Friedenwald, Baltimore.—p. 858.

Value of Dental Examination in Treatment of Ocular Disorders. W. L. Benedict, Rochester, Minn.—p. 860.

Some Optical Imperfections of Eye and Some of Their Uses. H. Sewall, Denver.—p. 865.

Two Cases of Glioma of Retina. C. C. Rush, Johnstown, Pa.—p. 869.

Malignant Melanoma of Choroid, with Gradually Decreasing Intraocular Tension. L. M. Francis, Buffalo.—p. 872.

Hereditary Reversion Pigmentation of Eyelids with Heterochromia of Iris. H. V. Würdemann, Seattle.—p. 874.

Orbital Epidural and Brain Abscess; Necropsy Studies. E. M. Blake, New Haven, Conn.—p. 876.
Hints in Relation to Dynamics of Extrinsic Ocular Muscles with Suggestions as to Treatment of States of Muscular Imbalance. J. M. Banister, Omaha.—p. 878.
Operation for Restoring Canaliculus. F. W. Dean, Council Bluffs, Iowa.—p. 883.
Painless Subconjunctival Injection. C. A. Campbell, Steubenville, Ohio.—p. 884.

Archives of Dermatology and Syphilology, Chicago

January, 1921, **3**, No. 1

*Study of Epidermophyton Inguinale. G. W. Wende and K. R. Collins, Buffalo.—p. 1.
*Tuberculosis of Lip. E. P. Zeisler, Chicago.—p. 14.
*Epitheliomas Developing on Lupus Erythematosus. W. G. Wander, St. Louis.—p. 22.
*Erythema Nodosum and Tuberculosis. J. H. Stokes, Rochester, Minn. —p. 29.
*Studies on Albuminuria and Eosinophilia in Scabies. J. M. Hayman, Jr., and T. S. Fay, Philadelphia.—p. 32.
*Pityriasis Rubra Pilaris. O. L. Levin, New York and E. B. Smith, Philadelphia.—p. 40.
Notes from Kalahi Leprosy Hospital. J. T. Wayson, Honolulu, H. I. —p. 45.
*Removal of Warts. T. K. Lawless, Chicago.—p. 47.
Study of a Case of Yaws (Frambesia Tropica) Contracted by an American Soldier in France. J. F. Schamberg and J. V. Klauder, Philadelphia.—p. 49.

Study of Epidermophyton.—Wende and Collins report on the results of an inquiry into the morphology of the causative fungi and a clinical and laboratory study of thirty-seven cases of dermal scaling.

Tuberculosis of Lip.—The case reported by Zeisler represents an unusual instance of solid tuberculoma of the lower lip with ulcerations of the buccal mucosa associated with a chronic pulmonary tuberculosis of the fibroid type. The author points out that tuberculosis of the lip must be differentiated from chancre and epitheliomatous ulcerations. A positive diagnosis rests on the finding of tubercle bacilli and the characteristic histology.

Epithelioma Developing on Lupus Lesion.—Four cases of carcinoma on lupus erythematosus are reported by Wander. During the past ten years, 110 cases of lupus erythematosus appeared, including the four of this report, making the incidence of the occurrence of carcinoma on lupus erythematosus 3.6 per cent. at the Barnard Free Skin and Cancer Hospital.

Erythema Nodosum and Tuberculosis.—Stokes reports a case terminating in tuberculous meningitis. The outstanding features of interest in this case are: 1. Absence of clinical evidence of tuberculosis when the patient presented herself with rheumatoid symptoms and erythema nodosum. 2. The apparently exact correspondence of the onset of erythema nodosum with the time of generalization of the tuberculous infection as estimated by the age of the tubercles found at necropsy. 3. The complete absence both in life and at necropsy of the septic foci responsible for erythema nodosum of the streptococcal or Rosenow types.

Albuminuria and Eosinophilia in Scabies. — Forty-nine patients were observed by Hayman and Fay. Albumin was found in ten. Of thirty-five untreated patients, six showed albumin, 17.1 per cent. In the fourteen treated patients, four showed albumin, 28.5 per cent. Of the patients showing albumin, all had a generalized eruption of the hands, arms, legs and trunk. None showed any special or peculiar type of lesion, nor were pustules especially in evidence. In fact they were more conspicuous by their absence. Therapeutic measures appear to increase the incidence of albuminuria. In no case were the urinary findings of clinical significance, and the patients complained of only cutaneous symptoms. Fifty-five cases of scabies examined had an eosinophilia.

Pityriasis Rubra Pilaris.—A report is made by Levin and Smith of a typical case of pityriasis rubra pilaris occurring in a male adult who revealed more or less definite signs and symptoms of thyroid dysfunction. The skin condition showed rapid improvement and an apparent cure was obtained with thyroid therapy alone. No claim is advanced for the specificity of thyroid extract in the cure of this disease, but it is recommended that organotherapy should be given a trial in the treatment of pityriasis rubra pilaris, and only by further study and careful clinical observations will its actual therapeutic value and effects be definitely determined.

Removal of Warts.—The ordinary high frequency apparatus is used by Lawless with the exception of the glass vacuum tube, instead of which, a metallic needle holder is used of such length that when it is inserted into the chamber of the high frequency apparatus an electric contact is formed. In the needle holder, a fine platinum or a very fine sewing machine needle is inserted and made secure.

Arkansas Medical Society Journal, Little Rock

December, 1920, **17**, No. 7

*Is Castor Oil an Oxytocic? St. C. Cooper, Fort Smith.—p. 141.
Use and Application of Surgical Solution of Chlorinated Soda. W. T. Lowe, Pine Bluff.—p. 143.

Action of Castor Oil on Uterus.—Cooper believes that castor oil, when given near term, has a selective action on the cervix uteri causing rapid cervical dilatation. It shortens the first stage of labor and brings on strong regular pains.

Boston Medical and Surgical Journal

Dec. 23, 1920, **183**, No. 26

Diagnosis and Treatment of Neurosyphilis. H. C. Solomon, Boston. —p. 723.
Cysts of Jaws. K. H. Thoma, Boston.—p. 730.
Minor Rôle of Conduction Apparatus in Slowly Progressive Deafness. F. P. Emerson, Boston.—p. 736.
*Hair-Ball in Stomach Causing Acute Abdominal Symptoms Successfully Removed at Operation. W. Whittemore, Boston.—p. 741.

Hair-Ball in Stomach.—Whitemore reports the case of a girl, aged 13 years, who entered the hospital with a diagnosis of acute appendicitis. For a year or more she had been in the habit of pulling hair from her head winding it about her finger and then sucking her finger. One year ago she began to have periodic attacks of pain in her stomach which she localized near the umbilicus. These attacks were associated with nausea and vomiting. This occurred about every two or three months, lasting a week. There had been no fever at any time, nor any blood from mouth nor with stools. Between attacks there had been almost constant pain in her stomach which was worse when she moved about and disappeared when she lay down. There was a questionable but indistinct mass in the left upper quadrant of the abdomen. Immediate operation seemed advisable and the preoperative diagnoses considered were (1) an intussuception, this being based largely on a questionable mass felt; (2) acute appendicitis with the appendix on the left side; (3) a perforation of the stomach from a mass of hair in the stomach, but although this possibility was discussed it was not considered very seriously. At operation a large, hard mass, which was somewhat movable was felt inside the stomach. A hair-ball, about the size and shape of the inside of the stomach, weighing 212 gm., was removed. The patient made an uneventful recovery.

Delaware State Medical Journal, Wilmington

Oct.-Nov.-Dec., 1920, **11**, No. 4

Presidential Address. H. M. Manning, Seaford.—p. 9.
Equilibrium and Vertigo. E. R. Mayerberg, Wilmington.—p. 12.
Naval and Aural Conditions Associated with Flying. W. H. Bonner, Wilmington.—p. 17.

Florida Medical Association Journal, St. Augustine and Jacksonville

December, 1920, **7**, No. 6

Treatment of Influenza Pneumonia. S. Erwin and L. Limbaugh, Jacksonville.—p. 87.
Value of Roentgen Ray in Diagnosis of Pulmonary Tuberculosis. A. H. Higgins, Tampa.—p. 89.

Johns Hopkins Hospital Bulletin, Baltimore

December, 1920, **31**, No. 358

Unpublished Letters of Laennec. W. S. Thayer, Baltimore.—p. 425.
*Pleural Spirochetosis. V. R. Mason, Baltimore.—p. 485.
*Vicarious Blood Platelet Formation. C. H. Bunting, Madison, Wis.—p. 439.
*Measurements of Intracranial Pressure Changes in an Epileptic and Its Experimental Variations. F. G. Ebaugh and G. S. Stevenson, Baltimore.—p. 439.
*Determination of Acetone in Breath. H. L. Higgins, Baltimore.—p. 447.
*Certain Cultural Characteristics of Gonococcus. E. O. Swartz, A. T. Shohl and D. M. Davis, Baltimore.—p. 449.

*Laboratory Method for Preparation of Fibrinogen. J. McLean, Baltimore.—p. 453.
Restoration of Hearing in Case of Gunshot Injury of Eustachian Tubes. J. W. Baylor, Baltimore.—p. 454.
Histologic Pathology of Case of Measles Conjunctivitis. J. R. Paul, Baltimore.—p. 455.
*Lymphosarcoma, Lymphatic Leukemia, Leukosarcoma, Hodgkin's Disease. L. T. Webster, Baltimore.—p. 458.
Some Adaptive Difficulties Found in School Children. E. L. Richards, Baltimore.—p. 461.

Pleural Spirochetosis.—Mason reports a case of what he believes to be the first instance of spontaneous infection of the pleural cavity by *Spirochactae bronchialis* (Castellani) recorded. The patient had been ill for several months before the empyema developed, but no examination was made of his sputum to determine the nature of the lung disease; however, its clinical course and the results of physical examination were very similar to those of bronchospirochetosis. Mason believes that during an attack of coughing an area of pulmonary gangrene was ruptured and spirochetes forced into the pleural cavity. Following the formation of a pneumothorax an empyema developed. The pus from the pleural space contained not only actively motile spirochetes but many bacilli and cocci.

Vicarious Blood Platelet Formation.—In a study of the blood of influenza patients of the 1920 epidemic, Bunting says he encountered what appears to him to be indubitable evidence of the compensatory formation of platelets or platelet-like bodies from leukocytes of the circulating blood. He speaks of this as a "compensatory formation" for the reason that in influenza there is apparently a sharp inhibition of bone-marrow activity with a marked fall in the number of circulating platelets as one of the results. Practically every large lymphocyte in the smear showed some stage in the formation of pseudopodia or platelets. By the term "large lymphocyte" is meant a cell, common in normal blood smears, which is apparently a mature form of the small lymphocyte. At least, it is a cell with a nucleus the size of that of a small lymphocyte, but with more protoplasm, which has an acidophilic staining tendency and contains a few coarse, often rod-shaped azurophilic granules. Some of these cells showed merely the collection of the granules about a point in the periphery of the cell; others, a slight protrusion of this part of the protoplasm; others showed the cutting off of the granule containing mass, while still others showed the formation of definite pseudopodia of considerable length with grouping of the granules as in platelets and with beginning constriction of the process evident. It was also noted in the smears that these lymphocytes had apparently acquired an increased adhesiveness over that normally seen, and in this case, a condition not shown by the other forms of leukocytes. Careful study of the preparations, however, eliminated from the author's mind the possibility that this adhesiveness was responsible for the production of the pseudopodia as artefacts. The clumping of the granules, the beginning construction of the pseudopodia, the varied direction of extension of the processes, the absence of signs of stree in cells close by, all indicated that here one was dealing with the production of platelet-like bodies, differing slightly morphologically but probably possessing the same functional value as indicated by this very adhesiveness. A similar process was noted in the blood of several other influenza cases, but in no case was there an approach to the extensiveness of the processes, noted in the case described.

Intracranial Pressure in Epilepsy.—The studies reported on by Ebraugh and Stevenson were made on a patient who had a sufficiently large area of bone defect in his skull the result of an operation which failed to relieve him from his attacks of epilepsy. The intracranial pressure changes was measured by the application of an inverted tambour. Roughly they follow absolute pressure changed in the cerebrospinal fluid. Rhythmic changes in intracranial pressure of various types have been recorded. Epileptic attacks are associated with a rise in intracranial pressure and are unaccounted for by activities of the patient. A rise of blood pressure sometimes occurs with the rise of intracranial pressure during the attacks. The patient gives subjective complaints associated with these changes. Petit mal attacks show typical kymographic tracings of pressure changes. Intracranial pressure is lowered by the intravenous and oral administration of hypertonic solutions. The oral administration of 200 c.c. hypertonic Ringer's solution gives a transient fall of 20 mm. water with a terminal rise of pressure. From 30 per cent. hypertonic glucose given intravenously a prolonged fall of pressure, averaging 20 mm., after a slight initial rise, was noted. These changes represent far greater changes in the true intracranial pressure. Glucose is more ideal to use for therapeutic purposes. The administration of hypertonic solutions (water) gives a constant increase of intracranial pressure. These changes are adequately controlled by the use of isotonic solutions.

Determination of Acetone in Breath.—Higgins states that for the past five years he has been using a chemical method of estimating quantitatively the acetone in the breath, determining in this way if acetone bodies are present in the body and roughly in what amounts. This has been found of practical value in many cases, especially in cases of hyperpnea, when acidosis is recognized or suspected, and it is important to know immediately if acetone bodies may not be the cause of the condition. In diabetic patients, the determination of acetone in the breath affords a rapid quantitative measurement of the amount present in the body; the determination is useful in diagnosing diabetic coma, and in following the condition of a patient when coma is impending or when changes in diet are being made. In cases in which a patient has been getting little or no food, as in fasting or recurrent vomiting, the determinations of the acetone in the breath act as a guide to the patient's condition. The method used is described in detail. The air for the determination is collected in a rubber bag of 1,000 c.c. capacity when full. Within thirty seconds after collecting the specimen, it is blown through the Scott-Wilson acetone reagent. If acetone is present a white cloud is formed which reaches its maximum density in about five minutes.

Cultural Characteristics of Gonococcus.—The superior growth of gonococcus in closed systems, when part of the air or of the oxygen has been removed or replaced, Swartz and his co-workers state, is essentially due to the lowered oxygen tension, and not to moisture, change of reaction, or presence of carbon dioxid. Moisture is, however, necessary to good growth. A reduction in the oxygen tension of 10 per cent. is sufficient to produce optimal growth. The gonococcus will grow luxuriantly, if the oxygen tension is suitable and moisture and uncoagulated proteid are present, on a medium having an initial reaction anywhere between p_H 6.6 and p_H 8.0, inclusive. In dextrose containing mediums, the acid endpoint for the gonococcus is p_H 5.6.

Preparation of Fibrinogen.—By substituting ammonium sulphate for sodium chlorid to salt out the fibrinogen a readily soluble precipitated fibrinogen was secured by McLean. No difficulty has been encountered in dissolving fibrinogen which has been reprecipitated three times. Thus a fibrinogen free from prothrombin, which tends to adhere to the precipitate, may be obtained.

Relationship Between Leukosarcoma, Lymphosarcoma and Lymphatic Leukemia.—The close relationship between leukosarcoma, lymphosarcoma and lymphatic leukemia is emphasized by Webster. Three leukosarcoma cases studied presented a blood picture of lymphatic leukemia, general involvement of the lymphatic system, infiltration of the parenchymatous organs and bone marrow, associated with an invasive mediastinal tumor. One case beginning as a localized tumor of the chest developed a typical lymphatic leukemia after roentgen-ray treatment. The glands were enlarged all over the body, the liver and spleen descended below the costal margin. It seems that leukosarcoma combines the features of lymphosarcoma and lymphatic leukemia and that a localized lymphosarcoma may under certain conditions become generalized and, with a blood picture of lymphatic leukemia, may terminate as a leukosarcoma. Very important in this connection is the mode of spread of the lymphosarcoma group which, regardless of its primary site, extends in a characteristic manner first by local infiltration and later by the blood stream to parenchymatous organs, lymph glands, bone marrow, etc. Webster suggests the term "lymphadenosis, leukemic or aleukemic" to simplify the classification until a definite etiologic agent is found.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

December, 1920, **16**, No. 5

*Action of Caffein, Theobromin and Theophyllin on Mammalian and Batrachian Heart. R. S. A. Heathcote, Oxford.—p. 327.
*Comparative Studies on Physiologic Value and Toxicity of Cotton Seed and Some of Its Products. I. G. Macy and L. B. Mendel, New Haven, Conn.—p. 345.
*Influence of Intravenous Injections of Acacia-Glucose Solutions on Urine Excretion and Blood Volume in Rabbits. P. M. Mattill, K. Mayer and L. W. Sauer, Chicago.—p. 391.
Anesthetic and Convulsant Effects of Gasolin Vapor. H. W. Haggard, New Haven, Conn.—p. 401.

Action of Caffein, Theobromin and Theophyllin.—It is claimed by Heathcote that caffein, theobromin and theophyllin have an active vasodilator action on the coronary vessels, probably muscular in origin, caffein being the weakest and theobromin the strongest. Experimental evidence is thus provided for the use of theobromin in those conditions such as angine pectoris in which coronary vasodilation may be of service.

Cotton Seed Meal.—The most characteristic clinical symptoms of cotton seed meal injury in rabbits, guinea-pigs, pigeons, and albino mice are emaciation, loss of appetite, weagness, rough hair and unkempt appearance, disturbance in breathing, finally coma and, perhaps, paralysis. Macroscopic postmortem examination reveals dilation of the right side of the heart, usually congestion of the liver, kidneys, and, in many cases, the lungs. Splanchnic congestion was frequent, and if the intestines were not hemorrhagic, they often appeared friable and easily ruptured.

Effect of Acacia on Blood Volume.—Mattill and his associates claim that acacia is capable of maintaining the blood volume in spite of a very marked glucose diuresis. Injecting acacia-glucose mixture wherein the glucose is present in concentrations of from 30 to 40 per cent. in quantities of about one half of the rabbit's blood volume in one and one-half hours, a decrease of the blood volume is practically prevented by the presence of 3 per cent. acacia in the injection fluid. Glucose injections without acacia produce uniformly a diminution of the blood volume.

Journal of Urology, Baltimore

December, 1920, **4**, No. 6

Later Development of Urethra in Male. F. P. Johnson, Baltimore.—p. 447.
*Intractable Bladder Symptoms Due to Ureteritis. G. L. Hunner, Baltimore.—p. 503.
*Improved Method of Determining Urea in Urine by Means of Urease. A. M. Roman, Chicago.—p. 531.
Value of Cultural Method in Diagnosis of Chancroid. O. Teague and O. Deibert, New York.—p. 543.
*Precipitin Reaction in Diagnosis of Gonococcus Infections. G. H. Robinson and P. D. Meader, Baltimore.—p. 551.
*Tuberculosis of Spine Resembling Pyelitis. N. B. Foster, New York.—p. 559.
Wax-Bulb Ureter Catheter for Routine Use, E. L. Keyes, Jr., New York.—p. 563.
*Solitary Cysts of Kidney. H. L. Kretschmer, Chicago.—p. 567.

Bladder Symptoms Due to Ureteritis.—Further experience with cases of so-called simple ulcer of the bladder and more careful history taking and more minute attention to possible foci of infection has led Hunner to reverse the opinion he held at first with reference to the absence of a distant focus of infection. One of the most striking circumstances leading to this reversal of opinion is the recent discovery that many patients suffering with this type of bladder ulcer have at the same time, or subsequently develop, ureteral stricture. In one case of resection of the bladder, the patient came back later suffering with symptoms due to ureteral stricture. In three bladder ulcer cases pyelitis developed during convalescence from the bladder operation and all three women were found to have ureteral stricture. Of the last twenty patients with an elusive ulcer, only eight of them operated on as yet, seven have had symptoms leading to the investigation for and the discovery of ureteral stricture. He says that his experience with ureteral stricture cases leaves no room for doubt as to the focal infection theory answering for the etiology in the vast majority of these cases.

Determination of Urea in Urine.—A new method for the quantitative determination of urea in urine by direct nesslerization is given by Roman which is said to be specific, accurate, practical and giving uniform results when performed by different technicians under the same conditions. An apparatus is used, which essentially is a vacuum flask, by the use of which the escape of ammonia formed is avoided.

Precipitin Reaction in Diagnosis of Gonococcus Infections.—Robinson and Meader claim that the present methods of diagnosing gonorrhea are inadequate since in many cases, clinically positive gonococci cannot be demonstrated in the discharge whereas a positive precipitin test is obtained in all cases where the gonococcus can be found in the discharge. A positive precipitin test is found in specimens from many patients whose history and clinical symptoms point to gonorrhea but in whose discharges the gonococcus cannot be demonstrated. The precipitin test is of value in the diagnosis of vaginal and other specimens where the microscopic demonstration of gonococci in the discharge is difficult or impossible.

Tuberculosis of Spine Resembling Pyelitis.—Foster's patient had attacks of unilateral pain resembling renal colic with intermittent fever and pyuria. Cystoscopic examination revealed pus from the kidney on the side with pain. Examination of the spine and roentgenograms were negative. Nephrectomy was done. Later kyphosis and signs of disease of vertebrae were discovered.

Solitary Cyst of Kidney.—Kretschmer cites a case of solitary cyst extending from the lower pole of the right kidney which had a double pelvis. A calculus was found in the superior pelvis.

Laryngoscope, St. Louis

December, 1920, **30**, No. 12

*Six Cases of Septic Sinus Thrombosis in Children. S. J. Kopetzky, New York.—p. 765.
Logical Cause, Pathology and Treatment of Brain Lesions. A. Kahn, New York.—p. 809.
Lateral Sinus Disease. H. H. Martin, Savannah, Ga., and S. J. Crowe, Baltimore.—p. 817.
Brain Abscess of Otitic Origin with Epileptiform Attacks; Decompression; Recovery. C. M. Sautter, New York.—p. 823.

Septic Sinus Thrombosis.—Kopetzky points out that the painless type of mastoiditis is a source of potential danger to patients because its gravity is not recognized, nor is it often diagnosed. He urges that a more general knowledge of the various types of mastoiditis, by specialist as well as general practitioner, is desirable, as not all types are to be treated alike. Some present graver risks to the patient than others. The findings at operation should be carefully studied, as a hemorrhagic lesion, accompanying or following an attack of influenza, and giving septic symptoms, should make a survey of the sinus condition imperative as soon as the necessary data to establish the diagnosis are at hand.

Maine Medical Association Journal, Portland

December, 1920, **11**, No. 5

Goiter. F. H. Lahey, Boston.—p. 145.

Medical Record, New York

Jan. 8, 1921, **99**, No. 2

Cardiac Arrhythmias and Their Identification by Methods Which are Generally Available. F. E. Cornwall, Brooklyn.—p. 43.
Concept of Roentgen-Ray Pathology. H. Pneumopathy. A. J. Pacini, Washington, D. C.—p. 46.
Insomnia. C. B. Pearson, Catonsville, Md.—p. 53.
Some Interesting Things About Tuberculosis. S. A. Slater, Worthington, Minn.—p. 56.
Autotransfusion for Hemorrhage. G. R. Love, Chicago.—p. 58.

Military Surgeon, Washington, D. C.

December, 1920, **47**, No. 6

Elementary Chemical and Bacteriologic Aspects of True Reaction of Culture Mediums. W. C. Cox and C. B. Wood.—p. 621.
Renaissance of Medicine in China. E. V. Cowry.—p. 653.
Report of Nerve Injuries Cared for at Evacuation Hospital No. 8, A. E. F. A. M. Hanson.—p. 662.
Management of Fractures. C. H. Moore and A. De F. Smith.—p. 666.
Results of Wound Excision with Suggestions as to Improvements and Alternative Methods. M. B. Tinker, Ithaca, N. Y.—p. 674.
Year's Work in Military Hospitals and Prospectus of Future. F. Kramer.—p. 681.
Making of Medical and Surgical History of War of Rebellion. L. C. Duncan.—p. 695.
Teaching in Army and Out. E. Colby.—p. 701.

New York Medical Journal

Jan. 8, 1921, **113**, No. 2

*Familial Distribution of Migraine-Epilepsy Syndrome. J. A. Buchanan, Rochester, Minn.—p. 45.
Animal Versus Vegetable Protein. W. H. Porter, New York.—p. 47.
Prevention of Venereal Disease. E. A. Rout.—p. 49.
Present and Contemplated Antinarcotic Legislation. T. S. Blair, Harrisburg, Pa.—p. 51.
Serious Ear Conditions and Complications in Ambulatory Patients. M. Rosenbluth, New York.—p. 54.
Woody or Ligneous Phlegmon of Reclus. Report of Two Cases Occurring in the Thigh. J. J. Gilbride, Philadelphia.—p. 56.
Traumatic Intramuscular Ossification. R. F. Maddren, New York.—p. 58.
Proctologic Examination as an Aid to General Diagnosis. A. A. Landsman, New York.—p. 60.

Migraine-Epilepsy Syndrome.—Two papers published by Buchanan elsewhere and bearing on this subject were abstracted in THE JOURNAL, Nov. 27, 1920, p. 1521, and Dec. 4, 1920, p. 1595.

Northwest Medicine, Seattle

December, 1920, **10**, No. 12

Internal Splinting of Bone. P. B. Magnuson, Chicago.—p. 299.

Oklahoma State Medical Ass'n Journal, Muskogee

December, 1920, **13**, No. 12

Experiences with Empyema at Base Hospital 191, A. E. F., France. P. P. Nesbitt, Muskogee.—p. 419.
Pulmonary Acoustics. L. A. Riely, Oklahoma City.—p. 429.
Value of Prenatal and Infant Welfare Clinics. C. V. Rice, Muskogee.—p. 432.
Selection of Sites for State's Tuberculosis Sanatoria. A. R. Lewis, Oklahoma City.—p. 434.

Public Health Journal, Toronto

December, 1920, **11**, No. 12

Health Education in Rural Schools. J. E. Browne.—p. 533.
Standard Treatment of Syphilis Used in Genito-Urinary Clinic of Montreal General Hospital. F. S. Patch.—p. 542.
When Typhus Raged in Canada. R. George.—p. 548.
Physician and Public Health Work. R. E. Wodehouse.—p. 552.
Plan for a More Effective Federal and State Health Administration. F. L. Hoffman.—p. 556.

So. Carolina Medical Association Journal, Greenville

December, 1920, **16**, No. 12

Diagnosis of Atypical Malaria. F. B. Johnson, Charleston.—p. 295.
Radium Therapy in Uterine Diseases. S. O. Black, Spartanburg.—p. 301.
Use of Mercurochrome-220 Soluble in Treatment of Some Urological Conditions. T. M. Davis, Greenville.—p. 304.
Gallbladder Complications of Typhoid Fever with Report of Cases. N. B. Heyward, Columbia.—p. 308.
Radium. A. R. Taft, Charleston.—p. 311.

Texas State Journal of Medicine, Fort Worth

December, 1920, **16**, No. 8

Some Important Factors in Prognosis of Pulmonary Tuberculosis. S. E. Thompson, Kerrville.—p. 331.
Tuberculosis in Infancy and Childhood. D. Greer, Houston.—p. 333.
*Use of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. I. S. Kahn, San Antonio.—p. 336.
Tuberculous Meningitis; Reports of Cases. W. R. Smith, El Paso.—p. 340.
Needed Change in Control of Tuberculosis. H. F. Gammons, Dallas.—p. 343.
Result of Sputum Typing in Pneumonia for 1919-1920. J. E. Robinson, Temple.—p. 345.
*Pulmonary Stenosis Following Streptococcus Pneumonia. J. H. Agnew, Houston.—p. 346.
Pneumonia at the U. S. Army Base Hospital, Fort Sam Houston, Texas, During Winter 1918-1919. F. D. Francis, Chicago, and H. J. John, Cleveland.—p. 348.
Modern Ideas on Etiology of Bronchial Asthma. G. C. Lechenger, Houston.—p. 353.

Artificial Pneumothorax in Pulmonary Tuberculosis.—Twenty cases are analyzed by Kahn. Ten show consistent betterment as a result of the operation, as evinced by marked and apparently permanent reduction or loss of cough, expectoration and fever. Four others while showing the same improvement, lost it through unavoidable intercurrent illness not related to either the tuberculosis or the operation. Three of these, though classified as failures, are still under treatment with at least reasonably fair chances of ultimate arrestment.

Pulmonary Stenosis Following Pneumonia.—Among 600 cases of lobar pneumonia seen by Agnew only one was noted in which endocarditis affected the right side of the heart. It is known that the heart was normal preceding the infection and therefore a congenital pulmonary stenosis or a patent ductus arteriosus can be ruled out. There was not the characteristic pulse of aortic stenosis, nor was the murmur transmitted to the vessels of the neck. There were no signs of aneurysm, which was further excluded by the roentgen ray. The murmur was entirely different from that of mitral insufficiency, and the pulmonic second sound was diminished in intensity. The position and character of the murmur, with the thrill and definite right-sided hypertrophy of the heart, established the diagnosis of pulmonary stenosis.

Wisconsin Medical Journal, Milwaukee

December, 1920, **19**, No. 7

Nervous Child. S. Blanton, Madison, Wis.—p. 323.
*Group Diagnosis and Group Therapy. L. F. Barker, Baltimore.—p. 329.
*Protein of Foodstuffs as a Factor in Cause of Headache. R. C. Brown, Milwaukee.—p. 337.
Treatment of Acute Respiratory Infections. O. M. Layton, Fond Du Lac.—p. 346.
Diagnosis and Treatment of Pernicious Anemia. A. R. Tormey, Madison.—p. 348.
Parenteral Injections of Milk in Diseases of Eye. C. Zimmermann, Milwaukee.—p. 352.

Group Diagnosis and Therapy.—The results of Barker's analysis of group diagnosis and group therapy are on the whole, favorable to these methods. Group medicine he says may be regarded as the latest phase of progress in practical clinical work. It is an outcome, of the growth of science, of the principle of division of labor, of the rise of specialism and of certain other factors. The general diagnostic survey, comphehensively, accurately, quickly, proportionally and economically conducted can be of great advantage to persons submitting to it, and therapy, too, can be carried out better through the coordinated activities of a group than by isolated practitioners. The arguments against group practice on the grounds of superfluousness, cost, inhumanity, cliquism, and commercialism are seen, on close scrutiny, to lose much of their cogency though they indicate difficulties and dangers against which group workers should be on guard. The profession and the public should welcome modifications of medical procedure that make practice more rational, precise and efficient. Medical practice even at its best cannot wholly take away the appetite of people for charlatanism and for superstition. Barker says we smile, sometimes, at the age when the Delphic oracle was consulted, but let us not forget that even today the ouija board is much in evidence, and that a distinguished physicist relies on spirit messages from his deceased son. But as medical science grows and physicians become more skilful and better organized, the people will become ever less susceptible to the delusions of obscurantism. And among the agencies contributing to this desirable end, group medicine may also find a place.

Proteins as Cause of Headache.—Brown maintains that the protein of foodstuffs is able to produce symptoms and manifestations in individuals in whom the protein mechanism is inadequate for those particular proteins. The protein poison manifestations may be most trivial or they may be severe. The articles of food which he has found most liable to cause headache as well as other protein manifestations are, in order of their importance, meat extractives, fruit and fruit extractives, eggs, meat, coffee, tea, chocolate, cocoa, and certain vegetables such as tomato, mushroom, rhubarb, and cucumber. However, any protein may be the cause. In one case the protein of oats and also that of white potato caused headache. The protein extracts such as meat soups and fruit juices are even more potent than meat or fruit. This shows that the protein poison is soluble. Brown believes that the usual hospital diet of meat soup, eggs and fruit juice is bad not only in cases of protein poison manifestations, but also in cases of infectious disease for it has a tendency to reduce the normal alkaline reserve of the body which is needed to combat infection. Brown states that migraine and periodic headaches are primarily due to an inherited deficient metabolism and can in every instance be cured by a properly restricted diet.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Dec. 25, 1920, **2**, No. 3130

*Stasis and Prevention of Cancer. A. C. Jordan.—p. 959.
Inflammatory Lesions of Nasal Accessory Sinuses. H. Tilley.—p. 962.
Army Medical Service and Its Relation to Training of Newly Qualified Medical Men. J. Griffiths.—p. 965.
Teeth in Recruit. J. P. Helliwell.—p. 968.
Regimental Medical Officer. R. J. Blackham and T. H. Blake.—p. 971.
*Autohemagglutination: Physiology and Pathology of Blood. C. J. Bond.—p. 972.
Case of Idiosyncrasy to Novarsenobillon. P. Power.—p. 976.
Cesarean Section for Eclampsia: Mother and Child Saved. G. G. Genge.—p. 976.

Prevention of Cancer.—To prevent the occurrence of cancer, Jordan says: Avoid stasis in general, with its attendant toxemia; in other words, keep all the tissues healthy. Avoid sources of local irritation in the alimentary tact: (*a*) in the lips and mouth and tongue—avoid rough pipe stems, jagged teeth; abolish pyorrhea; (*b*) in the pharynx and larynx—eliminate chronic catarrh; (*c*) in the esophagus—swallow no large boluses of food; eat slowly; masticate thoroughly; (*d*) in the esophagus and stomach—avoid excess of strong irritant spices (for example, mustard, pepper) and avoid extremes of heat and cold, especially in drinks; (*e*) in the stomach and duodeum—prevent duodenal distension, pyloric spasm, and duodenal and pyloric congestion, by abolishing the ileal stasis which causes them; (*f*) in the small intestine—prevent bacterial decomposition of the contents of the jejunum and ileum due to ileal stasis, by the means shortly to be described; (*g*) in the large intestine—prevent stagnation and decomposition of solid feces in any part; combat catarrh by local and general means. It is never too early in life to commence these measures.

Autohemagglutination.—Although the occurrence of specific and nonspecific hemagglutinin in the blood serum is evidently not the result of coagulation changes in the blood plasma, since they are present in the plasma before coagulation takes place, Bond states that the question still remains whether hemagglutinins exist as such in the living uninjured blood while it is still circulating in the body. It is difficult to believe that nonspecific autoagglutinin is present in the free state in the circulating blood (even in disease), for if so, unless some mechanism exists by which the agglutinating effect of this substance on the native red cells in prevented, clumping of the red corpuscles would occur during life. However, the blood is a fluid of which the physical and chemical equilibrium is easily upset, and the mere withdrawal of the blood from the vessels may injure it sufficiently to bring about a regrouping of its chemical and physical aggregates, and other changes which may be recognized as an alteration in the hemagglutinative reactions in the blood when shed.

China Medical Journal, Shanghai

November, 1920, **34**.

Scientific Efficiency of Mission Hospitals in China. H. Balme.—p. 1.
City Hospital. J. A. Snell.—p. 41.
Up-Country Hospital. A. C. Hutcheson.—p. 48.
Mission Hospital and Its Policy for Future. P. H. Stevenson.—p. 60.
Devolution of Control of Mission Hospitals. C. J. Davenport.—p. 67.
Hospital Assistant in China. G. Hadden.—p. 73.
Preparation of Nurses for China. N. D. Gage.—p. 89.
Methods of Hospital Accounting. H. S. Houghton.—p. 99.
Plea for Adoption of a Uniform System of Case Records and Methods of Reporting Statistics in Our Annual Reports. A. S. Crawford.—p. 100.
A Purchasing Agency for Hospitals in China. R. C. Beebe.—p. 113.
Problems of Our Mission Hospitals. H. Fowler.—p. 119.
Hospital Evangelism. D. M. Gibson.—p. 129.
Irreducible Minimum in Educational Evangelism. S. G. Peill.—p. 132.
Hospital Follow-up Work. C. Lewis.—p. 141.
Chinese General Hospital in France.—p. 145.
Chinese Hospital in France, 1917-1919. C. F. Strange.—p. 158.

Dublin Journal of Medical Science

December, 1920, **4**, No. 10

Acids and Alkalies. I. Modern Methods of Estimating Reaction of Physiologic Solution. W. Fearon.—p. 457.
Neurasthenia and Allied Conditions. A. Baldie.—p. 465.
Prophylaxis of Malaria. W. B. Walker.—p. 476.

Indian Medical Gazette, Calcutta

November, 1920, **55**, No. 11

Midwifery Mechanics. A. Buchanan.—p. 401.
Natural Cure and Prevention of Dysentery by Fasting. R. F. E. Austin.—p. 405.
Analysis of 336 Cases of Hydrocele and Hematocele in Which Operation for Radical Cure was Performed. M. Alam.—p. 408.
*Treatment of Oriental Sore. G. N. Doyle.—p. 410.
Tonsillectomy: A Simple Method Used in 840 Cases. R. H. H. Goheen.—p. 411.
Epidemic Dropsy at Malda Jail. B. K. Bhowmik and S. L. Sarker.—p. 412.
Case of Suprapubic Cystotomy Complicated with Typholumbricosis. P. T. Kothary.—p. 413.
Case of Mauling by Leopard. S. R. Bhattacharjee.—p. 414.
Case of Tri-orchid. V. R. S. Ayyer.—p. 415.
Tuberculous Glands in Axilla. K. Bhushan.—p. 416.

Treatment of Oriental Sore.—Doyle exposes a sheet of lead foil, 6 inches square, to the roentgen rays at a distance of 6 inches from, preferably, a soft tube for fifteen minutes. Appropriate pieces are then cut off from the lead foil so treated and applied to the sore, being held in position by a bandage. The routine has been to leave this on for four days, at the end of which another freshly prepared piece has been applied, and so on at intervals of four days. At the end of from two to three weeks, the sore has completely healed, no other treatment being necessary, except to protect the delicate scar with a small pad and bandage against possible injury.

Japan Medical World, Tokyo

Dec. 11, 1920, **10**, No. 50

Treatment of Syphilis of Central Nervous System. T. Komatsu.—p. 1083.

Dec. 18, 1920, **10**, No. 51

Intestinal Parasites Found Among Coreans. H. Kobayashi.—p. 1103.

Journal of Pathology and Bacteriology, Cambridge

December, 1920, **23**, No. 4

*Diurnal Variation in Sizes of Red Blood Cells. C. Price-Jones.—p. 371.
*Action of Roentgen Rays on Transplantation of a Spontaneous Carcinoma of Rat. H. Chambers, G. Scott and S. Russ.—p. 384.
*Hemolytic Fever. K. Yamakami.—p. 388.
*Case of Tuberculosis of Myocardium. W. W. Adamson.—p. 399.
Principles Underlying Gram's Stain, with Special Reference to Bacterial Cell Membrane. T. H. C. Benians.—p. 401.
*Splenic Lesions in Some Cases of Splenomegaly Associated with Secondary Anemia. E. H. Kettle.—p. 413.
Effect of Osmic Acid and Other Agents on Affinity of Receptors for Immune Bodies and on Their Antigenic Properties. M. Kosakai.—p. 425.
New Apparatus for Accurate Blood-Gas Analysis. J. S. Haldane.—p. 443.
Gases in Human Arterial and Venous Blood. J. Meakins and H. W. Davies.—p. 451.
Experimental Study of Gastrotoxic Serum. Y. Miyagawa.—p. 462.
*Effects of Roentgen Rays on Lymphocytes. S. Russ, H. Chambers and G. Scott.—p. 477.
*Pigments of Suprarenals. G. M. Findlay.—p. 482.
*Study of Leukocyte Changes in Pellagra Compared with Those Occurring in Beriberi. G. M. Findlay.—p. 490.

Variation in Size of Erythrocytes.—Having observed that in the healthy person there is a considerable variation in the mean diameter of the red cells, Jones endeavored to ascertain the reason therefor. A series of experiments finally led to the conclusion that this variation probably is due to altered reaction of the blood, though of the details of this alteration there is little direct evidence. It is, however, known that at the dreary moment of first awakening the blood is a good deal more alkaline than later on during the day. But whether the diminished alkalinity and increased diameters which prevail during the active part of the day are due to accumulation of carbon dioxid or lactic acid, or to some other source of altered reaction, cannot be determined.

Effect of Roentgen Ray on Resistance to Cancer.—The experiments made by Chambers, Scott and Russ indicate a lowering of the animal's resistance to the growth of malignant cells, if it be given a rather large generalized dose of roentgen rays; a result exactly the reverse to what occurs if the animal be given a series of exposures to very small quantities of roentgen rays.

Hemolytic Fever.—Yamakami states that the transfusion of a perfectly unhemolyzed nonisolytic blood does not cause any appreciable temperature variation of the recipient. The intravenous injection of the animal's own blood or nonisolytic

blood of other animals, hemolyzed with water, causes a febrile reaction similar to that produced by foreign proteins. Water, when injected intravenously into rabbits, causes a fever of typical form even when it is redistilled immediately before the injection. The fever is, therefore, not due to the contamination of water with a pyrogenetic substance of bacterial origin, but is to be attributed to its hemolytic property. The relationship between the quantity of the injected water and the variation of temperature is quite similar to that in the case of foreign protein injection.

Tuberculosis of Myocardium.—Adamson's patient had symptoms of tachycardia, and signs of enlargement of the heart with accentuated second sound in the pulmonic area. Later the heart sounds were both rapid and irregular. Two months before death he developed a temperature reaching 99 or 100 F. The urine had a slight amount of albumin. He had a history of syphilis, and the blood gave a positive Wassermann reaction. He became progressively worse, and died six months after admission to hospital. Both auricles were profoundly affected, especially the right one, where the wall was 1 inch thick, due to the caseous material. The tuberculous tissue projected into the auricle, though it did not penetrate the endocardium, and also projected slightly into the upper part of the ventricles. The myocardium near the apex of the heart showed invasion from the tuberculous pericarditis.

Splenic Lesions in Splenomegaly.—In five cases of so-called splenic anemia, the examination of the spleen removed by operation revealed a variety of changes representing at least four distinct and entirely different pathologic processes. Three of these are anomalous, but the fourth is well recognized under the name of Gaucher's disease. In none of the cases was there definite evidence that the disease was limited to, or primary in, the spleen, and in three of them, though the splenomegaly dominated the clinical picture, Kettle says it must be regarded as merely the most prominent feature in a more extensive pathologic process.

Effects of Roentgen Ray on Lymphocytes.—Russ and his associates state that, if a normal rat be irradiated for a time ranging from two seconds to about ten minutes, there is a strong probability that a bood count taken one hour later will show a diminution of 50 per cent. in the circulating lymphocytes. Rats immune to sarcoma were subjected to twelve seconds' dose of roentgen rays; the results showed a reduced susceptibility of the lymphocytes as compared with that obtaining in the normal rat.

Pigments of Suprarenals.—Findlay found lipochrome pigment in the suprarenals of man and the fowl. In the latter, the lipochrome is derived directly from the food. In addition to carotin and xanthophyll there is possibly present in the suprarenal a third substance related to the lipochromes. A true lipochrome infiltration occurs in all conditions associated with cell depression. Melanin pigment is of endogenous origin, and is formed within the nucleus in chronic conditions associated either physiologically or pathologically with cell depression.

Leukocyte Changes in Pellagra.—In pellagra, Findlay says, there is a slight increase in the total, but a decrease in the percentage neutrophil count. In beriberi there is a decrease in the total, but not in the percentage neutrophil count. In pellagra there is an increase both in the total and percentage lymphocyte count. In beriberi there is a decrease in the total, but not in the percentage lymphocyte count.

Journal of State Medicine, London

December, 1920, **28**, No. 12

Antigens and Antibodies. M. Nicolle.—p. 357.
Basic Principles in Roentgen-Ray Examination of Chest. M. Berry. —p. 368.

Lancet, London

Dec. 18, 1920, **2**, No. 25

*Spirochaeta Duttoni: Parasite of Tick Fever. W. B. Leishman.—p. 1237.
*Optic Neuritis in Lethargic Encephalitis. C. P. Symonds.—p. 1245.
*Sodium Bicarbonate Tolerance in Toxemias of Pregnancy. C. White. —p. 1248.
Albuminuria of Small White Kidney. I. J. Davies.—p. 1249.
*Danish Treatment of Scabies. S. Lomholt.—p. 1251.

Parasite of Tick Fever.—Leishman deals with his subject on the following lines: first, with a condensed account of some of his earlier work; secondly, with work which has either not been published or only briefly mentioned; thirdly, with the work of others on the same or closely related branches of inquiry which appears to have a bearing on the life history of *S. duttoni*.

Optic Neuritis in Lethargic Encephalitis.—Four cases are reported by Symonds in which optic neuritis was associated with signs of widespread lesions of the nervous system. Despite individual points of resemblance none of these cases corresponds with the clinical picture of acute disseminated myelitis, anterior poliomyelitis, or acute febrile polyneuritis. If the definition put forward by Barker, Cross and Irwin be accepted, the clinical signs of all four cases are consistent with the diagnosis of lethargic encephalitis. In one case the Wassermann reaction in the blood was feebly positive. In the blood of the remaining three and in all four cerebrospinal fluids, the Wassermann reaction was negative. In all four cases the cerebrospinal fluid showed changes consistent with the diagnosis of lethargic encephalitis. Symonds states that the association of optic neuritis with acute disseminated myelitis is an involvement of the optic nerves in a diffuse inflammatory process affecting the nervous system, analogous to the association of optic neuritis with lethargic encephalitis.

Sodium Bicarbonate in Pregnancy Toxemia.—White has used sodium bicarbonate in most forms of pregnancy toxemia as a method of treatment and he has also employed Sellards' method as a means of diagnosis and prognosis. The patient is given measured quantities of sodium bicarbonate at given intervals, and her urine tested by litmus paper before each dose is given. The amount given when the litmus is first turned blue is noted, and further doses are stopped till the urine is again acid. If there is ammoniacal cystitis the urine should be boiled in a test tube to drive off ammonia before testing, or less accurately, the litmus paper itself may be heated. White has found it safer to order it in dram doses (as nurses are liable to make mistakes when working in grams) and has usually given 1 dram in water every three or four hours. The average quantity taken by mouth (exclusive of any quantity given per rectum and intravenously) in fifteen cases was 45.3 gm. For purposes of comparison thirteen normal cases were observed and their urine was alkaline after an average of 6.8 gm. Thus the average sodium bicarbonate tolerance of patients clinically suffering from pregnancy toxemias is 45.3 gm. compared with the average tolerance of 6.7 gm. in puerperal cases not suffering clinically from toxemia. Further, the fatal cases has a tolerance of 40 gm. on the part of those that recovered. If a rough attempt is made to gage the severity of the clinical manifestations by the method of treatment adopted, it is found that the average tolerance of those on whom it was thought necessary to perform cesarean section or induction was 61.7 gm. compared with 33 gm. of those who were allowed to deliver themselves with or without the help of forceps. Three patients had nephritis. Their average tolerance is 23 gm. or lower than the primarily toxemic cases.

Danish Treatment of Scabies.—A form of scabies treatment with a new ointment in use in Denmark has proved so much of an advance on all other treatments that it is now almost the only one used all over the country. One single inunction suffices; after twenty-four hours the scabies is cured, and relapses are never seen. The cutaneous irritation is but slight. The treatment can very well be ambulant. The patient receives an ordinary cleansing bath, wipes himself thoroughly, and afterward rubs the whole of his body, except the head, carefully with the ointment, which is almost of the consistency of butter. The ointment must cover all the skin, but hard rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour, to give the ointment time to get into the skin; after this he can go to bed. The next day at about the same hour he receives a second bath and fresh underclothing and the cure is finished. Meanwhile all his clothes have been disinfected. Lomholt doubts, however, if this is absolutely necessary. All statistics seem to prove this very simple treatment is as absolutely reliable as it is comfortable for the patient. The preparation of the

ointment is a little complicated. (1) One kg. of sublimated sulphur is dissolved at a gentle heat in 2 kg. of a 50 per cent. solution of potassium hydroxid. This makes a clear yellow solution. (2) Two hundred and twenty-five gm. of petrolatum and 225 gm. of water-free lanolin are carefully mixed, without heating. (3) To this, 375 gm. of the solution of sulphur in potash lye mentioned above, is added. (4) Fresh zinc hydroxid is prepared in mixing 28 gm. zinc sulphate and 40 gm. 20 per cent. sodium hydroxid and this is afterward added to the ointment. (5) Liquid paraffin is added to obtain a total weight of 1,000 gm. (6) Five gm. of benzaldehyd is added to check the somewhat disagreeable smell of sulphuretted hydrogen. The high sulphids of potassium are the capital element of the ointment on which its activity depends, a production of sulphuretted hydrogen taking place when the ointment is placed on the skin.

Archives des Maladies du Cœur, etc., Paris.

September, 1920, **13**, No. 9

*Syphilitic Aneurysm of Pulmonary Artery. M. Letulle and A. Jacquelin.—p. 385.
*Pathogenesis of Diastolic Gallop. L. Gallavardin.—p. 410.
*Significance of Reaction to Amyl Nitrite. G. Richard.—p. 416.

Syphilitic Aneurysm of Pulmonary Artery.—Letulle and Jacquelin report a case of true aneurysm of the pulmonary artery in a man of 58. The aorta and the peripheral vascular system were practically intact. Retrograde thrombosis had developed toward the heart, reaching to the bifurcation of the main trunk, thus shutting off almost completely the venous blood from the right lung, with resulting stagnation of blood and an apoplectiform edema in the air passages.

Pathogenesis of Diastolic Gallop Rhythm.—Gallavardin's conclusion is that the diastolic gallop is not merely a variety of the presystolic gallop, but is a special stethoscopic sign, the main factor in which is a modification of the heart cycle, either from interference with the conduction of the impulse from auricle to ventricle or from an abnormal prolongation of the systole of the ventricle. This explains the gravity of the cases in which it is encountered.

Amyl Nitrite and the Vascular Reactions.—Richard recalls that amyl nitrite inhibits the action of the vagus center while stimulating the vasodilating fibers. Hence the reaction to this drug shows whether the elasticity of the arteries is impaired, and also their power of contracting as the effect of the drug rapidly passes off. A feeble vasodilating and lower pressure reaction demonstrates that the arteries are less elastic than normal, and points to arteriosclerosis. This drug also shows at once whether the vagus or the sympathetic nervous system is overirritable. With sympatheticotonia the accelerating reaction is exceptionally rapid and intense, the maximal and minimal blood pressure findings show a prompt and deep drop, and after the effect of the drug passes off, there is a characteristic reaction of high blood pressure. With vagotonia, the drop in the blood pressure is less pronounced, and there is no secondary high rise in the blood pressure, while the appearance of extrasystoles under the influence of the nitrite confirms anew the exaggerated excitability of the vagus. Amyl nitrite furnishes interesting information also in regard to the condition and the reactions of the myocardium, as demonstrated by the sphygmogram. There are other ways of learning these points, but there is none so universal, he says, and so constant in its results, so available and so harmless.

Archives de Médecine des Enfants, Paris

December, 1920, **23**, No. 12

*Pneumococcus Purpura. P. Nobécourt and R. Mathieu.—p. 689.
*Ether-Oil by the Rectum in Children. J. Salazar de Souza.—p. 700.
*Renal Secretion in Children. Apert, Cambe-rédès and Mme. de Rio-Branco.—p. 709.
*Atypical Varicella. I. Iankoff (Sophia).—p. 714.
Mongolian Blue Spot at S. Paulo, Brazil. C. Ferreira.—p. 721.
Tarsal Scaphoiditis in Children. J. Comby.—p. 723.

Purpura in Pneumococcus Infection in Infants.—Nobécourt and Mathieu say that pneumococcus infections have been common at the maternity in their charge in the last two years, but purpura was noted only in two of the infants with pneumococcus pneumonia or meningitis. They compare with this five similar cases on record, with the necropsy findings in the total seven cases. The purpura developed in the course of pneumonia, enterocolitis, or meningitis when the condition was already grave, or it seemed mild and retrogressed, as in the two personal cases described, but three or four days later the fatal pneumonia or meningitis became manifest. The purpura is evidently an expression of septicemia; all the cases testify to its extreme gravity. Purpura may develop in cachexia or meningococcus infection, as well as forming a part of the hemorrhagic tendency in the newborn.

Ether-Oil Anesthesia by the Rectum for Children.—Salazar de Souza gives the details of 120 operations on children done under rectal anesthesia, and comments that the ease and facility of this method justify a trial of it by all who do operations on children, especially operations on the head. In his cases the ages ranged from 2, 4 and 5 months to 16 years. There were seven deaths in the total 120 cases but the anesthesia could not possibly have been incriminated in five, and in the two others any connection with the rectal anesthesia seems highly improbable.

The Ureosecretory Constant in Children.—Apert and his co-workers describe the application of various functional tests for the kidneys in eleven children from 6 to 11 years old. They modified the Ambard formula, as they describe, to conform to the relative proportional weight of the kidneys in children, obtaining in this way the same coefficient for the normal child as for the normal adult. This confirms that the essential characteristics of kidney functioning are practically the same at all ages.

Atypical Varicella.—The abnormal chickenpox induced profuse diarrhea and grave acute enterocolitis in two children a little over 2. The varicella was not diagnosed in one of the cases until another case developed in the environment.

Bulletin de l'Académie de Médecine, Paris

Nov. 30, 1920, **84**, No. 38

*The Sputum in Asthma. F. Bezançon and S. I. de Jong.—p. 253.
*Isolation of Active Principles of Plants. E. Bourquelot.—p. 258.
*Local Supraclavicular Tenderness in the Tuberculous. G. H. Lemoine. —p. 269.
*Avitaminosis and Inanition. A. Lumière.—p. 274.
*Multiple Abscesses in Brain with Subacute Course. H. Claude.—p. 277.
*Spurious Adenoid Disturbance. A. Castex.—p. 278.
*Hereditary Congenital Dislocation of Hip Joint. L. Dubreuil-Chambardel.—p. 281.

The Sputum in the Diagnosis of Asthma.—Bezançon says that his thirteen years of study of the sputum of persons with a tendency to asthma has confirmed the differential importance of eosinophilia in the sputum. Crystals and spirals are negligible, but the eosinophilia in the sputum reveals that the spasmodic coughing, especially at night, and the dyspnea in the tuberculous, not explainable by the extent of the lesions, are in fact the result of a possibly otherwise latent tendency to asthma. The absence of eosinophilia in other cases excludes the assumed asthma, and directs elsewhere the search for the cause of the disturbance. This is particularly important in men over 50 with attacks of distress in breathing at night. The eosinophilia and the benefit from treatment for asthma separate a curable group from those with heart and kidney disease. Even when asthma complicates other diseases, the benefit from eliminating this element in the clinical picture is obvious. The eosinophils are readily shown up by staining with hematein-eosin after fixation with alcohol-ether or methyl alcohol.

Biochemical Tests for Active Principle of Plants.—Bourquelot has applied the method described to 281 species of plants, and it revealed the presence of glucosids in 205 of them. The plants in question are more or less in use as household remedies in different countries, and some are officially inscribed. About 250 vegetable alkaloids have been isolated to date, but in 1901 only ten glucosids had been isolated. Then he began his search on the glucosids, based on the discovery that all glucosids hydrolyzable with emulsin are levorotatory. If addition of emulsin changes the polarization to the right, we can be certain of the presence of a glucosid which can then be isolated. He has thus isolated fifteen new glucosids in his laboratory, including eleven from drugs already used in medicine. This brings to fifty-six the

number of glucosids isolated to date, but as glucosids are known to exist in 205 species, 149 other species are still awaiting investigation.

Tenderness Over Tuberculous Apex.—Lemoine relates that with an active tuberculous process at the apex, pressure with the finger in the first interspace showed a painful point in 192 tuberculous tested, while there was no local tenderness in the normal, and in those with disease elsewhere. Some have been under observation for from six to eight years, the local tenderness disappearing as the tuberculous process healed. This local tenderness, if associated with abnormal supraclavicular glands in a suspect, turns the scale in favor of tuberculosis. Sabourin locates this *"zone d'alarme"* at the center of a line from the base of the neck to the acromion.

Avitaminosis and Inanition.—Lumière reports that pigeons develop polyneuritis when kept on a starvation diet but fed with an excess of vitamins. They develop polyneuritis exactly the same as on the same diet with no vitamins. He explains this paradox as confirming that avitaminosis is merely a special form of inanition. When rice was supplied to these pigeons in sufficient amounts, they recuperated as rapidly as those which had developed the same polyneuritis paralysis in consequence of one-sided feeding on polished rice alone. Thus the polyneuritis developing from insufficient diet (4 gm. of polished rice and 2 gm. of glucose plus 1 gm. of beer yeast to supply an excess of vitamins) was promptly cured by addition of polished rice. The special function of the vitamins seems to be to stimulate the gastro-intestinal motor functioning and the secretory functions of the glands with an external secretion. Without vitamins, the digestive functions are sluggish and the organs of digestion hypotonic. The digestion glands cease to function when deprived of vitamins, and the animals succumb to the loss of these gastro-intestinal secretions although their digestive tract may contain abundance of nourishment. They also succumb if deprived of sufficient nourishment to keep them in health, even although there is abundance of vitamins. The symptoms are those of starvation in general, but about a third of the animals develop in addition the paralytic and cerebellar disturbances which have hitherto been regarded as pathognomonic of vitamin deficiency.

Innumerable Abscesses in the Brain.—Claude reports the case of a young man with advanced pulmonary tuberculosis who suddenly began to complain of agonizing headache, and died after three days of vomiting and mental confusion. Necropsy showed absolutely innumerable abscesses throughout the cerebellum, the whole forming a purulent sponge, and yet this condition had not elicited any appreciable symptoms until the last three days.

Clinical Picture Suggesting Adenoids.—Castex describes seven groups of children with symptoms falsely suggesting adenoids. The symptoms characteristic of adenoids may be induced by malformation of the septum by a projecting spur, by hypertrophic rhinitis, by atrophy of the intermaxillary bone from inherited syphilis, by rachitic deformity or overgrowth of the mucosa in children of the lymphatic type. Children with a relatively long cephalic diameter often have an abnormally high, hard palate which shortens the vertical diameter of the nasal fossae. Some of the above anomalies may concide. The children with these symptoms are generally a little older than those with true adenoids, but they may be associated, or first attract attention after an operation for adenoids.

Heredity of Congenital Dislocation of the Hip Joint.—In this communication five instances are described in which women had had congenital luxation of the hip joint corrected in early childhood, but their children presented the same type of dislocation as the mothers had been born with.

Journal de Chirurgie, Paris

1920, **16**, No. 6

*Reconstruction and Fixation of Fractured Long Bones. E. Juvara (Bucharest).—p. 589.

Reconstruction and Fixation of Fractured Bone.—Juvara's thirty-three illustrations show the different methods applicable for treatment of fractures. He prefers the use of a metal bar through which pass horizontally and parallel four long steel skewers that are driven deep into the bone. They hold the reconstructed bone firmly until healing is complete, and then they are drawn out and nothing is left in the tissues. He insists that the osteosynthesis should be done at once, as an emergency operation, as soon as roentgen examination of the fracture is possible. The operation is concluded with application of the above *fixateur* or other method for maintaining the osteosynthesis, driving in a screw, or tying a wire around the bone at two or three points.

Lyon Médical

Dec. 10, 1920, **129**, No. 23

*Phlegmons of Orbit and of Eyeball. Rollet and Bussy.—p. 965.
*Fracture and Contusion of Larynx. J. Garel and A. Gignoux.—p. 969.
The Manifest of the Oxford Professors. B. Lyonnet.—p. 1002.

Phlegmons of the Orbit and Eye.—Rollet and Bussy emphasize the difference in cause, treatment and prognosis between a phlegmon of the orbit and a phlegmon of the eye. No one dies from the latter, but the eye is lost. One may die from a phlegmon of the orbit, but the eye is not lost; it floats safely on the flood of pus. This independence of these two lesions is contrary to all experience with pathology of the viscera. With a phlegmon in the orbit, the frontal sinus should always be explored. They advise for this a small opening at the angle formed by a horizontal line passing through the two supra-orbital notches and a vertical, perpendicular line crossing it. There is no risk from this small opening here. If the mucosa is found sound, a stitch in the eyebrow hides the little scar. If the sinus is found diseased, the operation is completed by trephining and draining. Frontal sinusitis may induce a phlegmon in the orbit by the infection spreading by veins or lymphatics through the apparently sound bone. The sphenoidal sinus is scarcely ever responsible for a phlegmon in the orbit, but an infectious process in the maxillary sinus is very liable to spread to the orbit. Draining through the roof of the sinus is simple and effectual and the differential diagnosis is easy. But frontal sinusitis is the most common cause. While it is often hard to discover, it may progress without any symptoms until the orbit becomes involved.

Trauma of the Larynx.—Garel and Gignoux report six cases of contusion of the larynx with fracture in two, and discuss the differential diagnosis. Traumatism of the larynx is said to be generally accompanied with loss of consciousness, but this was not the case in their experience. Vitalba has compiled a few cases of sudden death from concussion of the larynx, and Bassère has reported an instance of prolonged inhibition of the respiratory and cardiac nerve centers after concussion of the larynx, the unconsciousness persisting for nine hours, with Cheyne-Stokes respiration and slowing of the pulse down to 40, this keeping up for three weeks. Violent paroxysmal coughing and spitting of blood follow the traumatism. In one of their cases this hemoptysis persisted for several months. Dyspnea is the most serious symptom, and it may become exaggerated at any moment from extravasation of blood, emphysema or edema, so that we must not trust to the patient's apparently doing well. Even several days after the accident there may be sudden asphyxia from acute edema, secondary hemorrhage or displacement of some fragment of cartilage during an abrupt movement. The prognosis is very different with simple contusion, although the symptoms at first may be the same with fracture as with contusion. The latter often causes such slight disturbance that the specialist's aid is not sought, but it may affect the voice irreparably.

Nourrisson, Paris

November, 1920, **8**, No. 6

*Stillbirths in France. Chambrelent.—p. 321.
*Choleriform Diarrhea in Infants. A. B. Marfan.—p. 336. Cont'n.
Congenital Heart Defects. E. Apert.—p. 347.
*Vomiting Form of Meningitis. H. Lemaire and Stiassnie.—p. 362.

Stillbirths.—Chambrelent's tables show that there are from 2.6 to 7.3 stillborn to every 100 viable children born in France. The proportion is highest in the industrial centers, and the regions where liquor drinking is most prevalent. From 1907

to 1910, inclusive, between 104 and 105 boys were born living to each 100 girls, but the proportion among the stillborn was from 131 to 137 boys to 100 girls. The figures for the country during the war are not available, but in three of the largest cities the proportion of stillbirths was no higher, in fact it was a little lower, during the emotional stress of the war than in other years. The statistics cited show the immense share of syphilis in the death of the fetus, and the benefit in this respect when the mother is given treatment during the pregnancy and the father before conception. Lead poisoning is another important factor that can be avoided, but the main factor responsible for high morti-natality, as he calls it, is the various forms of autointoxication. The fetus suffers from toxins derived from the mother or from abnormal conditions in the placenta, most of which are avoidable. He states that of 642 women who attended Oui's special "consultations for the pregnant," all but 2.85 per cent. were delivered of living children instead of the 8 per cent. stillbirths which is the average otherwise in the town (Lille). Among the 642, 135 were found affected with syphilis, tuberculosis, lead poisoning, albuminuria, hemorrhages, or contracted pelvis or other deformity threatening the life of the child. By careful medical supervision of the pregnancy it was thus possible to reduce by two thirds the number of the stillborn.

Choleriform Diarrhea in Infants.—In this instalment of Marfan's long study he discusses the conditions liable to be confused with choleriform diarrhea: strangulation of a hernia, heat fever, invagination of the intestine, galloping athrepsia, special intolerance for milk, tuberculous meningitis, cholera, and poisoning from arsenic or other drug. The choleriform diarrhea may be primary or secondary, but primary toxic diarrhea never occurs in infants breast fed or not getting cow's milk, and when toxic diarrhea develops, the primary cause must be ascertained. Treatment of choleriform diarrhea includes restriction to boiled water or weak tea for two days at least and never more than four, usually for three days, with very cautious resumption of feeding, supplemented by subcutaneous injection of camphor, caffein, and epinephrin to sustain the heart, raise the blood pressure and stimulate the nervous system. He has abandoned infusion of saline as superfluous. These measures are supplemented with hot baths 38 C. (100.4 F.) for five or ten minutes two or three times a day the first day, and once or twice the second day. If the rectal temperature is up to 40 C. and the extremities are not cold, he has the water cooler, about 36 or 35 C. If the pulse is not perceptible and there seems to be danger of collapse, he adds mustard to the water. After the bath the infant is dried and rubbed with cotton dipped in alcohol until the skin is red. It is a good plan to give the injection of camphor or caffein just before the bath. Lavage of the stomach is too much of a shock for the toxic phase, and there is no evidence that flushing the bowel is of any use in choleriform diarrhea, while each is liable to bring on convulsions. It seems plausible to, assume that the pressure of the water on the bowel mucosa may dissolve matter adhering to the bowel wall and thus facilitate the absorption of toxic substances. He also refrains from drugs to check the diarrhea, and from alcohol, during the toxic phase. In prophylaxis he advises artificial chilling of the room. He adds that even at the best, the mortality from choleriform diarrhea is still very high.

Uncontrollable Vomiting in Meningitis.—The child 20 months old was taken suddenly with headache, restlessness and irregular fever with frequent uncontrollable vomiting. Necropsy the third month explained the clinical picture by disclosing bulbar and medullary meningitis and subacute ependymitis with internal hydrocephalus, all on a basis of inherited syphilis.

Presse Médicale, Paris

Dec. 4, 1920, **28**, No. 89

Tuberculosis of Bronchial Glands and Lung in Children. H. Méry.—p. 873.
*Treatment of Alopecia Areata. R. Sabouraud.—p. 874.
Urinary Disturbance After Typhus and Relapsing Fever. L. Strominger (Bucharest).—p. 876.
Technic for Radiotherapy of Uterine Myoma. Haret and Grunkraut.—p. 877.
Pirquet's Dietetic System. L. Cheinisse.—p. 878.

Treatment of Alopecia Areata.—Sabouraud remarks that it is a great mistake to treat the patch of alopecia alone; the aim should be to prevent the development of new patches, regarding the treatment of the existing patch as secondary to this. Another mistake is to wait to see whether the alopecia will harmlessly subside; it is far better to treat it from the first as if it were going to be a grave form. This will not harm the mild cases while it will abort many of the graver forms. He advises to brush the entire scalp with a hard toothbrush dipped in a tonic and revulsive mixture. His formula for this is: cologne water, 300 c.c.; glacial acetic acid, 10 gm., and commercial solution of formaldehyd, 1 gm. A lotion of 30 gm. of Hoffmann's fluid with 1 gm. of glacial acetic acid is applied to the patch itself and its vicinity. In case the course of the alopecia seems threatening rapid extension, the small hairs broken off 3 or 4 mm. above the skin, he resorts to a cade oil salve. Men rub it in every evening and wash it out with soap in the morning; women three times a week with a weekly soap shampoo. He describes other measures for the graver cases, high frequency current, etc., and emphasizes that ten years of study of the subject have convinced him that inherited syphilis is responsible for a surprisingly large proportion of cases. The general health improves under mercurial treatment, as well as the alopecia; his success in this line has been so striking that he advocates mercurial treatment for young people with poor health or vague disturbances even if the idea of syphilis seems preposterous. When the alopecia develops at the menopause, ovarian treatment may aid, but this type generally heals spontaneously.

Dec. 8, 1920, **28**, No. 90

Asthma and Sclerosis of the Lung. F. Bezançon and S. I. De Jong.—p. 885.
Ligation for Wounds of Common Carotid. G. Coudray.—p. 886.
*Salvarsanized Serum in Treatment of Neurosyphilis. D. E. Paulian.—p. 888.

Salvarsanized Serum Treatment.—Paulian recalls that Marinesco published in 1911 his successful treatment during 1910 of syphilis with serum from other syphilitics who had been treated with salvarsan. He describes the technic used at present in Marinesco's service, and explains the efficacy of the treatment as due to the antibodies, spirocheticidal substances. He cites Kjeldahl's assertions as to the relations between the total nitrogen and the quantity of antibodies in the blood stream, and states that the total nitrogen in the blood increases as the arsenic disappears. The increase is progressive, and hence he advises to take the serum twenty-four hours after the injection, as the amount of antibodies must be higher then than earlier.

Progrès Médical, Paris

Nov. 20, 1920, **35**, No. 47

*Ulcer in the Greater Curvature of Stomach. L. Timbal.—p. 505.
*Intra-Uterine Treatment of Postpartum Infection. H. Vignes.—p. 507.
*Spina Bifida in Cervical Vertebrae. A. Feil.—p. 510.
Apoplectiform and Epileptiform Ictus in Mental Disease. H. Damaye.—p. 511.

Ulcer of the Greater Curvature of the Stomach.—Timbal emphasizes the gravity of the prognosis with ulcer of the greater curvature on account of the special danger of intense and tenacious pains from inflammatory adhesions. The pains are in the left hypochondrium, and spread to the flank and shoulder. The ulcer may perforate into the posterior cavity of the omentum with localized peritonitis, pushing the stomach forward and the liver upward. The peritonitis spreads below the liver, with a horizontal zone of dulness surmounted by a resonant zone close to the lower margin of the liver. This clinical picture begins with a sharp pain like a stab wound, and the abdomen retracts, with vomiting and tendency to syncope. This peritonitis may subside spontaneously—he has had such a case—but this is exceptional. Ulcer of the greater curvature is liable to induce formation of hour-glass constriction. More than gastric ulcer elsewhere, an ulcer in the greater curvature develops by waves, with possibly nearly symptomless intermissions. Ulcer of the greater curvature is less amenable to medical measures than ulcer elsewhere, so that the advisability of operative measures should be considered early.

Intra-Uterine Treatment of Postpartum Hemorrhage.—A very similar article by Vignes was summarized Dec. 18, 1920, p. 1751.

Localization of Spina Bifida in the Neck.—Feil's experience shows that spina bifida in the cervical spine is not such a rare occurrence. It should be suspected when there is little if any neck, the hair growing down to the level of the dorsal spinous processes, and when the movements of the head on the trunk are limited. This limitation is purely mechanical and there is no pain. Spina bifida may also be found in the lower and middle portions of the cervical spine as well as in the upper vertebrae.

Schweizerische medizinische Wochenschrift, Basel

Dec. 2, 1920, **50**, No. 49

*Cysticercus in Cerebellum. M. Hausmann.—p. 1105.
*Ascarids in Liver and Pancreas. D. Eberle.—p. 1110.
*Sinusitis. E. Schlittler.—p. 1112. Conc'n in No. 50, p. 1142.
Primary Carcinoma in Both Vagina and Cervix. H. Hofer.—p. 1116.
*Disinfecting Power of Sunlight. J. von Bergen.—p. 1120.
Dial Poisoning. H. Christoffel.—p. 1123.

Cysticercus in Cerebellum.—The young woman was suddenly affected with vertigo and vomited; poisoning from a dish of sauerkraut was assumed, as the mother had vomited at about the same time. But the mother rapidly recovered while the symptoms in the young woman continued a progressive course, imposing the assumption of a tumor in the right side of the cerebellum. While an operation was being considered the patient died, and at necropsy a cyst was found at the anticipated site. It shelled out readily and proved to be the work of *Cysticercus tenuicollis*. The right lobule of the cerebellum had been pressed into the foramen magnum, which explained the peculiar way in which the patient had held her head bent over to the left.

Ascarids in Liver and Pancreas.—In Eberle's first case the boy of 9 had been treated for appendicitis and helminthiasis. Five months later an operation on account of jaundice and pain revealed an ascaris in the gallbladder and three more in the hepatic duct, all living, and from 20 to 25 cm. long. The history of the case indicates that these ascarids must have been living in the bile apparatus for about six months, and had thus escaped the action of the repeated courses of santonin treatment. The gallbladder showed chronic irritation, but there had been no pain except presumably when the helminths were migrating through the Vater region. Eleven days after the operation, two more ascarids were removed from the bile ducts. All the helminths had their heads toward the liver. It is the first case on record, he says, of an operation for invasion of the bile apparatus under the age of 10. Eberle reports further a case in a woman of 45. Six gallstones and six living ascarids over 20 cm. long were removed from the common bile duct, twenty-five from the hepatic duct, thirty-five from the parenchyma of the liver, and two from the pancreas. Both liver and pancreas were studded with small abscesses. Eberle knows of only four cases on record of this combination of gallstones and ascariasis in the bile apparatus. The seventy ascarids mentioned were nearly all alive as also most of the eighty found in the digestive tract. The aspect when the abdomen was opened was mistaken for cancer at first. The result of santonin courses should be supervised and not be left to chance.

Complications of Paranasal Sinusitis.—Schlittler declares that there is scarcely any adult who has not had sinusitis at some time. The complications are not so serious as with middle ear infection although the bacteria involved are about the same. There have been only three deaths at the Basel clinic for which sinusitis was directly responsible, among the 2,225 cases. The sinusitis group formed 10 per cent. of the 21,290 cases of disease of the nose treated in 1898-1918. In the total 2,225 cases of sinusitis, complications developed in only 1 per cent. Some instructive cases are described; in one an acute coryza entailed the rupture of an unsuspected suppurative process in the frontal sinus. The ophthalmologist consulted on account of the swelling and pain in the orbit, diagnosed it as a primary orbital process and incised, nothing in the nose suggesting sinus mischief. The middle-aged formed the largest contingent of sinusitis cases, but he reports a case in an infant, only 1 year old, with acute ethmoidal sinusitis. Complications are most liable with frontal sinusitis, but they are mild as a rule, while the reverse prevails with inflammation in the maxillary sinus, orbital complications being rare but very grave, especially in the effect on vision. In several cases reported there was a chill at the onset, and the destructive process in the orbit or other adjacent cavities became installed almost over night. Even the fetid discharge from the nose on that side, protrusion of the eyeball, etc., were not regarded as of much moment, and operative measures were delayed for two or three weeks. By this time vision was irreparably lost in some of the cases. Furuncles, phlegmons, etc., may present an almost identical clinical picture, but the necessity for differentiation is not great if the practitioner makes it his rule to urge operative intervention without delay in all cases of symptoms indicating suppuration in the bones of the face and accessory cavities.

Disinfecting Action of Sun's Rays on Tubercle Bacilli.—Bergen reports as the results of his extensive tests at Leysin that direct exposure of virulent tubercle bacilli to the sunlight, at an altitude of 1,360 meters, rendered them innocuous when injected into the peritoneum of guinea-pigs after an exposure of half an hour during the summer. An hour's exposure was required for this during the spring and fall, and a little longer in the winter. His research has further convinced him, he says, that the share of the ultraviolet rays in this action of the sunlight has been much overestimated.

Dec. 9, 1920, **50**, No. 50

*Nature and Origin of Antibodies. H. Sahli.—p. 1129. Conc'n follows.
*Influence of External Heat on Stomach Secretion. A. Fischer.—p. 1139.

Nature and Origin of Antibodies.—Sahli rejects Ehrlich's side-chain theory of the formation of antibodies, except that it is based on the sound principle that the organism is capable of responding to extra demands with extra performance, not only in the nerve and muscle systems but also in the purely chemical sphere. But Sahli does not locate the site of this extra performance in the cell protoplasm, as Ehrlich did, but in the blood and tissue fluids. The cells produce the antibodies physiologically, in response to the demands of the blood and tissue fluids, and these demands fluctuate according to conditions at the moment. The ability of a substance to act as an antigen is dependent on the property of the organism receiving it to be capable of forming the corresponding antibody, that is, it must already possess a little of the antibody, already formed. The introduction of the antigen merely increases the amount formed. Diphtheria antitoxin, for exampie, may be found in the blood of persons and horses who have never been infected with diphtheria, and the antibodies in these and similar cases seem to be identical with the antigen-antibodies, as also with the anti-antibodies induced in other species. For instance, an antibody for sea urchin spermatozoa is found in normal rabbit serum. The absolutely infinite variety of colloidal-chemical combinations in the blood, tissue fluids and lymph, explains the large number of antibodies already existent. The artificial enrichment of any antibody occurs according to the well known laws that more is secreted to make up a deficit, and that this secretion is always carried to an excess beyond the actual need. Antibody production is thus nothing more than one form of the physiologic regeneration of the blood, this regeneration carried to excess. The antigen and the antibody unite in a colloidal combination, and this shuts off the functioning of the antibody from the blood. The organism responds to this loss of the antibody functioning by an extra secretion to produce more of the antibody. Accepting the above three premises entails the further premise that the blood is a secretion, and he presents an array of arguments to sustain this view.

Influence of External Heat on Secreting Function of Stomach.—Fischer insists that the experiences related in this line that have been published by others are based on mistaken premises. In his research on dogs with a Pawlow fistula, hot air baths reduced by 50 per cent. the secretion of gastric juice. This suggests the advantage of hot air baths

in treatment of catarrhal hypersecretion, and possibly also of hypersecretion of mucus, as well as in treatment of gastric ulcer.

Pediatria, Naples

Nov. 15, 1920, **28**, No. 22

Vaccine Against the Staphylococcus. R. Vaglio.—p. 1033.
*Treatment of Vincent's Angina. F. P. Borrello.—p. 1039.
Unreliability of the von Dungern Serologic Test in Inherited Syphilis. F. Lo Presti-Seminerio.—p. 1043.
Mediastinal Abscess with Pott's Disease. C. Pestalozza.—p. 1048.
The Thymus. A. F. Canelli.—p. 1056. Cont'n.

Arsenicals in Vincent's Angina.—Borrello gives the details of six severe cases of fuso-spirillar ulceromembranous infection and refers to twelve others, all recovering after an average of two or three injections of neo-arsphenamin by the vein, applied also locally to the lesions. Some required up to five and eight injections; others were cured in a week or two with two injections, and one with a single injection of 5 cg.

Policlinico, Rome

Nov. 29, 1920, **27**, No. 48

*Familial Alkaptonuria. E. E. Debenedetti.—p. 1379.
Technic for Injection of Silver Salvarsan. C. Lombardo.—p. 1383.
*Intratracheal Injection of Neo-Arsphenamin. C. Bruzzone and E. Vecchia.—p. 1384.

Familial Alkaptonuria.—In the family described by Debenedetti no instances of alkaptonuria were known until two cousins married, and their four sons all had alkaptonuria while the two daughters escaped. One of the alkaptonuric sons has married a cousin, and their daughter has hip joint disease. Garrod and Umber have reported cases with a hereditary stamp, but nothing of the kind could be discovered in this family, possibly because all the children of the alkaptonuric sons happen to be girls (eight). The younger sons have no ochronosis nor deforming arthritis, but the older one has both in a pronounced form, and the son 30 years old has arthritis deformans.

Intratracheal Administration of Arsphenamin.—Bruzzone states that his experiments on animals and clinical experience have shown that arsphenamin solutions can be injected intratracheally without harm. The rabbits did not show the slightest reaction to the drug injected rapidly into the trachea, by inhalation or tracheopuncture, in the dose of 1 cg. per kilogram of neo-arsphenamin dissolved in 2 or 3 c.c. of distilled water. There were no symptoms of dyspnea and no modification of the respiration. In a syphilitic who had long been wearing a tracheal tube, and another with an ulcerating gumma in the pharynx, this intratracheal method proved effectual and harmless, as also in some ordinary cases of syphilis. Only one of the patients coughed a little after the injection, the others showed no reaction or only slight headache, and some a moderate febrile reaction. The surface area is so extensive that absorption evidently proceeds rapidly. The special indications for this method, aside from such cases as the above, are in spirochetal bronchitis and gangrene of the lung. Two cases have been reported recently in France in which pulmonary gangrene healed under intratracheal injections of a medicated oil.

Riforma Medica, Naples

Oct. 30, 1920, **36**, No. 44

*Changes in Cardiovascular System After Exercise. A. Barlocco.—p. 997.
*Horse Serum Treatment of Melena Neonatorum. R. Fuà.—p. 1004.
*Treatment of Gout. G. Guelpa (Paris).—p. 1006.

Modification of Circulation Under Muscular Exercise.—Barlocco discusses the modification of the diameter of the heart, the pulse and the blood pressure in normal persons, in those with heart disease well compensated, and in those with cardiac neuroses, under muscular work, extra exertion and fatigue. He studied the effect of epinephrin and of atropin in these various conditions, and compares the results in vagotonia and sympatheticotonia.

Melena Neonatorum.—Fuà extols the remarkable benefit from injection of 10 c.c. of horse serum in the arrest of severe melena and hematemesis in infants 2 or 3 days old. He gave calcium chlorid at the same time to some and repeated the injection once or twice in a few. In case of melena in sepsis, he thinks that human serum from an adult might be preferable, as this would provide bactericidal elements lacking in the serum of the newly born. But, otherwise, the horse serum seems to answer the purpose; even the common hemostatics are superfluous.

Treatment of Gout.—Guelpa's rather revolutionary treatment of gout is based on the premise that the urine of the gouty is hypo-acid or even alkaline. The aim therefore should be to give and generate acids in the organism. Meat and acid drinks are his main reliance for this. The first four days he gives a daily purge with abundance of acid drinks and mild decoctions but no food, solid or liquid; the next four days, meat three times a day, with acid fruits and beverages, toast and potato. These four day periods are repeated, alternating as before, mitigating the severity of the régime by the clinical findings. With treatment on these principles he has never failed, he says, in twenty years to cure his gouty patients, even those most severely ankylosed and variously deformed. It requires strict conformance to directions, and the pains in the joints may be worse during the fasting at first, but this is a beneficent reaction and is speedily followed by improvement. The purge he prefers for the first day is jalap, taken in a liter of hot boiled water; the three following days, sodium sulphate, also taken in a liter of hot boiled water, drinking it, fasting, at five minute intervals, sipping in addition decoctions of mallow, chamomile, linden, weak tea or weak coffee. He thinks it is important also to demineralize the drinking water, as he describes.

Rivista di Clinica Pediatrica, Florence

October, 1920, **18**, No. 10

*Spasmophilia and Changes in Endocrine System. M. Pincherle and B. Maggesi.—p. 577.
*Etiology of Measles. V. Zamorani.—p. 613.
Echinococcus Cyst in Liver of Boy of Five. N. Fedele.—p. 623.

Spasmophilia and Endocrine Derangement.—Pincherle and Maggesi report the necropsy findings in seven children, six of whom had died from laryngospasm, and the other from tetany associated with pneumonia. All showed signs of rachitis and a lymphatic tendency, with positive Chvostek phenomenon and frequent Trousseau. The Erb phenomenon was pronounced in four, and convulsions were common. Necropsy revealed evident anatomic changes in the endocrine organs in every case, sometimes of the whole endocrine system and sometimes of only one or a few. The thymus was never found normal in any of the seven, and the parathyroids in all but one showed more or less anatomic changes, mostly of the type of sclerosis but sometimes hemorrhagic. These endocrine lesions evidently formed the substratum which favored the development of spasmophilia. The involvement of several of these endocrine glands in the neck region explains the inefficacy of a single organ extract in treatment. All but two of the cases confirm the great importance of hereditary and familial factors in spasmophilia, which the Bologna school has emphasized.

Etiology of Measles.—Zamorani's bacteriologic research was practically negative. Of the various bacteria that have been incriminated in the causation of measles, those must be excluded, he says, which do not confer immunity after infection with them. Measles confers a durable immunity.

Brazil-Medico, Rio de Janeiro

Oct. 16, 1920, **34**, No. 42

*Lutz-Jeanselme Juxta-Articular Nodes. F. Silva.—p. 687.
Eugenic Regulation of Marriage. R. Kehl.—p. 689.

Juxta-Articular Nodes.—Silva relates that Lutz of Brazil was the first to describe this affection, his report on some cases having appeared in the *Monatshefte für Dermatologie* in 1892. But it is generally called by Jeanselme's name although his publication on the subject followed much later. Silva gives an illustrated description of a case in a woman. The large symmetrical lumps just below each elbow have persisted without much change for twelve years. The nodes are movable, cause no pain, and the largest measures 5 cm. in diameter and is 3 cm. high. The long course, absence of inflammation and other features exclude gumma, tuberculosis, and other lesions that might be confounded with it.

Semana Médica, Buenos Aires

Oct. 21, 1920, **27**, No. 43

*Dislocation of Vertebra without Symptoms from Spinal Cord. J. M. Jorge.—p. 535.
*Filariasis in Argentina. S. E. Parodi and L. L. Bonavia.—p. 543.
Present Status of Diagnostic Biologic Reactions. R. Kraus.—p. 548.
Lethargic Encephalitis at La Plata. G. B. Cavazzutti.—p. 554.
Predigestion of Milk with Yeasts Plus Cultures of Saprophytes. S. Tatti.—p. 557.
Priority for Sulphotitanic Test for Morphin. C. A. Grau.—p. 560. Id. J. A. Sánchez.—p. 561.

Dislocation of Cervical Vertebra Without Cord Symptoms.—Jorge's roentgenograms show complete dislocation forward of the fifth cervical vertebra while the sixth is still in normal position, but there have been no symptoms on the part of the spinal cord during the six months since the fall causing the dislocation. Movements of the neck are painful, and Jorge is planning to have the man wear a collar to support the head as in a hammock and induce the necessary hyperextension. If this can be realized, the man of 35 may be able to regain partial earning capacity at least. If symptoms on the part of the spinal cord develop, surgical measures will of course be indicated at once.

Filaria in the Eye.—Parodi and Bonavia removed a filaria 11 cm. long from the conjunctiva of a woman of 62 who had presented symptoms in the right eye for four days. The filaria kept coiling and uncoiling and moving around, and after its removal kept up lively movements for three days until killed with alcohol. No microfilarias could be found in the blood, and the features of the parasite suggest that it is an undescribed species.

Siglo Médico, Madrid

July 17, 1920, **67**, No. 3475

*Color Audition. V. Ribón (Bogotá).—p. 525.
Successful Vaccine Therapy of Otitis. I. Fernández Seco.—p. 526. Cont'd.
Epidemic Encephalitis. R. Cruchet (Bordeaux).—p. 527.
Present Status of Fight Against Tuberculosis. A. Espina y Capo.—p. 529. Cont'd.

Colors Perceived from Sounds.—Ribón has published instances of color audition, as mentioned in THE JOURNAL at the time. He here quotes the words of a blind man who perceives certain colors with certain strains of music or other sounds. He urges others to report instances confirming the close connection between the psycho-optic and psycho-auditory centers.

Aug. 21, 1920, **67**, No. 3480

*Enrichment of Sputum. A. Villegas.—p. 625.
*Headache. F. Haro.—p. 627. Conc'n in No. 3481, p. 649.
Acute Attacks of Cardiac Insufficiency from Abnormally High Blood Pressure. Elizagaray.—p. 629. Cont'n.

Aug. 28, 1920, **67**, No. 3481

Silver Salvarsan in Therapeutics. J. S. Covisa and J. Bejarano.—p. 645. Conc'n in No. 3482, p. 671.

Enrichment of Sputum.—Villegas keeps the wide-mouth flask with the sputum at a temperature of 37 C. (98.6 F.) and examines it at the twenty-fourth, forty-eighth and the seventy-second hours. Part of the sputum is liquid then and nearly as clear as water. He dilutes to a tenth and centrifuges, and then examines under the microscope. In a recent series of twelve sputums examined, the number of bacteria had increased from one to over seventeen by this simple means.

Interpretation of Headache.—Haro defines the zones and regions of the head involved in headache, and the diseases or lesions that correspond to the different zones. It may give the first clue to the nature of the primary disease, especially pain in the vertex with syphilis, growing worse at night, and the frontotemporal pain sometimes observed with lung and heart disease, with iritis and in epidemic meningitis.

Archiv für Verdauungs-Krankheiten, Berlin

1920, **27**, No. 1

*Causes of Death with Cirrhosis of Liver. E. Blumenau.—p. 1.
*Study of Peristalsis. B. Zondek.—p. 18.
*Etiology of Chronic Gastric Achylia. K. Faber.—p. 24.
*The Later Tests for Occult Blood. I. Boas.—p. 37.

Causes of Death with Cirrhosis of the Liver.—Blumenau found 198 cases of cirrhosis of the liver among 12,761 necropsies, and 126 showed macroscopic cirrhosis. As a contribution to the pathologic physiology of the liver, he records the causes of death in this last group. In 19 per cent. the cirrhosis itself, or its direct consequences, were responsible. In another 19 per cent., the cardiovascular system must be incriminated, and arteriosclerosis in particular in 15.09 per cent. The youngest in this last group was 52, the oldest 68, showing the long survival possible with even advanced cirrhosis, and that the fatal outcome is often conditioned by some intercurrent disease. Erysipelas was responsible for ten cases and tuberculosis for 10.31 per cent., other infectious diseases bringing the total to 26.19 per cent. In 13.42 per cent. death had occurred from cancer, and in seven of the twenty-six cases in this group the primary cancer was in the liver. Kidney disease was responsible for only 2.4 per cent. of the total deaths. In the total 188 macroscopic and microscopic cases of cirrhosis of the liver, all but 18 per cent. were men. Blumenau mentions parenthetically Spanje's warning of the great losses of albumin when patients are repeatedly tapped. He estimates that one of his patients who had been tapped 158 times in the course of six years must have lost a total of albumin amounting to half his weight.

Peristalsis in the Large Intestine.—Zondek implanted a disk of celluloid, as large as his palm, in the abdominal wall of a rabbit, and watched through this abdominal window the play of peristalsis in the large intestine. The animals were kept permanently on their backs, and they all survived for several weeks. He was amazed at the lively play of the peristalsis in the colon, the waves about thirty seconds apart. He found further that eating food exerted the strongest stimulus on peristalsis, far surpassing that from stimulation of the vagus.

Etiology of Chronic Gastric Achylia.—Summarized when published elsewhere, July 3, 1920, p. 72.

Tests for Occult Blood.—Boas says that Snapper's spectroscopic method for determination of occult blood in the stomach content and feces is not so sensitive as some other methods, so that only positive findings are reliable until the technic is further improved. But he reiterates that the occult blood findings with a reliable method permit the diagnosis and differential diagnosis of cancer with a certainty not to be attained otherwise, as his thirty years of experience have demonstrated. The spectroscopic method gives identical findings with those of Gregersen's modification of the benzidin technic. Even 2 c.c. of blood introduced into the stomach gives the hemochromogen stripe in the spectroscope, which renders it possible to test in this way the reliability of any and every catalytic test. The simplicity and reliability of the Gregersen technic commend it to the general practitioner as decided progress in the diagnosis of cancer, but the chloral-alcohol-guaiac test is the most sensitive of all. The vegetable oxidases can be destroyed by boiling or with mineral acids, which do not affect hematin. In 282 cases of gastric cancer confirmed by operation, in four German clinics, occult blood was found in from 91.7 to 95.2 per cent. of the cases. Taken in connection with the clinical findings, it may prove decisive, although there is no absolutely pathognomonic sign of gastric cancer or ulcer. For the Gregersen technic, 0.02 gm. of benzidin is dissolved in 5 c.c. of 50 per cent. acetic acid. To this, he adds 0.1 gm. of barium peroxid for the catalyzer. The test is then applied as usual. The reaction is invariably negative in normal persons on a milk-vegetable diet. Boas has both of the reagents for the Gregersen test made up in tablet form, and applies the test on a porcelain dish or visiting card, instead of the slide used by Gregersen.

Deutsche Zeitschrift für Chirurgie, Leipzig

1920, **157**, No. 1-2

*Diphtheria of Wounds. W. Löhr.—p. 1.
*Intestinal Occlusion from Adhesions. M. Flesch-Thebesius.—p. 60.
*Pseudo-Hernia after Fracture of Rib. F. Ochlecker.—p. 98.
Paralysis of Abdominal Wall. F. Ochlecker.—p. 119.

Diphtheria of Wounds.—Löhr cites 122 surgical cases with local development of diphtheria infection, especially in wounds after resections. The surgical status was seemingly normal, but in the course of recovery development of paralysis was frequent. Serum treatment was attempted without avail, except where intravenous injection was given, preceded by

subcutaneous injection for antianaphylaxis. Dressings with antitoxin occasionally reduced the local phenomena. A bibliography of 148 papers on septic and dermal diphtheria is attached, in connection with which author discusses exhaustively the history of the subject. The bacteriologic conditions with wound diphtheria are much like those in bacilli carriers.

Intestinal Occlusion from Adhesions.—Flesch-Thebesius analyzes 368 cases of occlusion in Rehn's service, of which 162 were caused by peritoneal adhesions; 113 of which had a history of a previous laparotomy; and sixty-nine of these a previous appendectomy. Each group is discussed historically and clinically, and the theory advanced that aseptic processes in the peritoneal cavity are less conducive to intestinal bands than inflammatory or traumatic ones. Iodin in direct contact with intestinal serous membranes favors the development of adhesions; but the introduction of fluid fat into the peritoneal cavity which is said to act as a preventive, is no certain protection, and is liable to induce irritation. Bibliography of 128 articles.

Pseudohernia After Fracture of Rib.—Oehlecker observed a number of war cases where a unilateral, partial paralysis of the abdominal wall had been caused by the severing of intercostal nerves. The condition easily escapes observation, because the anesthesia of the skin in that locality is not noticed by the patient. The diagnosis is easy: letting the patient increase his abdominal tension and then testing the local sensibility. Surgeons often overlook the fact that the intercostal nerves VI to XII also supply the abdominal walls. Injury to these nerves should be avoided in thorax surgery, because the local paralysis, while not dangerous, leads to a reduced volume of expiration. Sudeck's operation (*Beitr. z. klin. Chir.* **25**:111) is recommended.

Zeitschrift für Kinderheilkunde, Berlin

Nov. 3, 1920, **27**, No. 1-2

*The Growth in Length of Infants. B. Waser.—p. 1.
*Growth of the Prematurely Born. C. Frankenstein.—p. 44.
*Feeding of the Newly Born. B. Schick.—p. 57.
*Passage of Salts Through Placenta. F. Edelstein and A. Ylppö.—p. 79.
Classification for Treatment and Teaching Purposes of Children in Orphan Asylums. E. Lazar.—p. 92.

Growth in Length of Infants in Health and Disease.—Waser's measurements are tabulated for a large number of infants at a Zurich asylum.

Influence of Diseases on Growth of the Prematurely Born.—Frankenstein writes from the Kaiserin House, the model institution for infants at Berlin, to describe the proportional growth of 100 prematurely born children up to the ninth year. In contrast to children born at term, the prematurely born display temporary and even chronic disturbance in the growth impulse after very mild acute intercurrent disease or nutritional derangement. There is not the rapid repair afterward which is the rule with other children, especially the growth in length which some regard as the main manifestation of the growth impulse. When the prematurely born escape exogenous injury during the first months of life, they usually develop until in a few years they cannot be distinguished from children born at term. But any injuries, even mild influenza or slight acute digestive disturbance may check and premanently impair their growth impulse so that they grow up substandard.

Feeding of the Newly Born.—Schick's third article on this subject is devoted to an account of the feeding of sixty-two prematurely born infants with human milk sweetened by addition of 17 gm. beet sugar to 100 gm. breast milk. By this means the infant is given the amount of calories needed in half the volume of food. This raises the sugar content of the breast milk from the normal 6.7 per cent. to 24 per cent. but it halves the amount of protein and salt. Hence this cannot be kept up for longer than from five to eight weeks, but for this period he regards the method as great progress for the feeding of weakly prematurely born. Then vomiting, loss of appetite and stationary weight call for a change, and substitution of sweetened full milk answers the purpose. He gives the details of nearly a dozen such cases long under observation.

Passage of Salts Through the Placenta.—In this research Edelstein and Ylppö demonstrated that the salts in the mother's serum do not pass through the placenta by the laws of osmosis alone. Some vital activity of the placenta cells seems to be the main factor; the fetal serum from the blood in the umbilical vein contains more of the diffusible salts than the mother's serum. Both the sodium and the potassium content is higher. On the other hand, the content of alcohol-soluble material is higher in the maternal than in the fetal serum. This they ascribe to the residual nitrogen in the mother's blood.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Oct. 9, 1920, **2**, No. 15

Clinical Forms of Pulmonary Tuberculosis. J. E. Stumpff.—p. 1377.
*Tuberculosis of the Skin. S. Mendes da Costa.—p. 1388.
*Relations Between Heart Autonomic Center and Heart Innervation. A. K. J. de Haas.—p. 1397.
*Action of Potassium Ions and Uranyl Ions on Isolated Perfused Rabbit Heart. E. H. Jannink and T. P. Feenstra.—p. 1406.

Tuberculosis of the Skin.—Da Costa enumerates a long list of tuberculous processes liable to affect the skin, and emphasizes that while treatment is essentially local, general strengthening measures are as indispensable here as with tuberculosis in internal organs. Lupus now, he says, is given over almost entirely to Finsen phototherapy.

Relation Between Autonomic Heart Center and Heart Innervation.—De Haas' numerous tracings show the effect of atropin, etc., in a case of heart block. He was impressed with the action of even minute doses of atropin by the mouth in inhibiting the functioning of the ventricle center while displaying no influence on the auricle beat.

Potassium Ions and the Surviving Heart.—In the research reported the surviving rabbit heart stopped beating when perfused with Ringer's fluid minus the potassium. If the potassium is replaced with uranyl, the heart continues to beat the same as if potassium had been added to the fluid.

Dec. 4, 1920, **2**, No. 23

*Pathogenesis of Gout. D. Klinkert.—p. 2457.
*Psychoses and the Internal Secretions. J. de Hartogh.—p. 2465.
Influence on Eye Muscles of Heat Stimulation of Labyrinth. F. H. Quix.—p. 2471.
*Furuncles on the Lip. O. Lanz.—p. 2475.

Pathogenesis of Gout.—Klinkert regards the nervous factors as the main ones in gout, and traces this idea through the history of gout, ascribing a minor rôle to uricacidemia. "It is impossible to explain the explosion of a gouty attack by any deposit of urates, but a discharge of accumulated nervous force might readily explain it, and explain further the symmetrical symptoms, and the shifting about of the symptoms." Garrod has reported a case in which application of local measures to the joint involved in the gouty attack cured it, but a violent attack of angina pectoris followed. Others have published cases in which the cure of the gout in the joint was followed at once by a pain in the bladder, with hematuria, and as this subsided the heart action became extremely irregular and months elapsed before the heart beat was strong and rhythmic again as before. Treatment of gout Klinkert reiterates, should not aim to cure the gouty joint too completely; the joint attacks are never dangerous. Flannel and patience are perhaps the best local measures, but every effort should be made to tranquillize and regulate the irritable nervous system, the real basis of the disturbances. "Moderation in everything, physical and mental, is the best preservative against gout."

Psychoses and Internal Secretions.—De Hartogh emphasizes the importance of the action of toxins in the causation of mental disturbances. These poisons may be of internal or external origin, and it is our task to discover and check the source of the toxins. In a certain proportion of cases they come from an upset of the balance of the endocrine glands. By tentative administration of thyroid or ovarian extract we may not only reveal the source of the toxins but be able to cure the psychosis by removing this source. He reports some instructive examples of psychoses. An emotional shock may be capable of modifying the secretions of one or more of the endocrine glands, just as we know that it is capable of inducing vasomotor, secretory and chemical changes. In an

instructive case described the woman had a psychosis at two pregnancies both of which had terminated in a miscarriage and the disappointment was extreme. De Hartogh thinks that the corpus luteum was probably responsible for the recurring psychosis in this case. He gave thyroid treatment at first, but without benefit. A change to ovarian extract was followed by marked improvement and a complete cure, both at the first and at the second miscarriage.

Furuncle on the Lip.—Lanz preaches the importance of being wary with the knife in case of infectious processes on the lips. There is such a wealth of blood vessels and lymph vessels in the lips that the danger of driving pus cocci into the blood is exceptionally great. A furuncle on the lip should always be regarded and treated from the first as a serious matter, keeping the patient in bed, and jnsuring that he does not scratch or press on the lesion, for otherwise he might be in danger of forcing the pus cocci himself into the blood stream. "Treat a lip furuncle conservatively, with possibly a warm, 1:1,000 solution of salicylic acid. If the lesion has to be lanced, the necrotic center should be punctured with a fine actual cautery but without pressure. When the blood and lymph vessels have been opened with the knife, if they are obliterated at once with the thermocautery the danger of infecting the blood stream is reduced." He advises to be as prudent with a furuncle as with a malignant pustule. He has treated his seven patients with malignant pustule with conservative measures alone, without incising, and the lesions all healed under alcohol and salicylic dressings. Two in the group were veterinarians. In conclusion he warns physicians to be always on the alert not to let pus get on their hands. The danger for themselves is great but it is even greater for their patients. "Rubber gloves are more useful in the bag than an amputation knife which may never be needed." Casual contamination of the hands should be prevented by wearing ordinary gloves. He adds "Pus contamination of the physician's hand persists—nothwithstanding soap, scrubbing and mercuric chlorid—like the spot of blood on Lady Macbeth's hand, the 'damned spot' that would not 'out.'"

Hygiea, Stockholm

Nov. 16, 1920, **82**, No. 21

*Urine Test for Active Tuberculosis. K. Gramén.—p. 673.
Organization of a Bacteriology Laboratory. A. E. Bastman.—p. 681.
*Steinach's Research on the Puberty Gland. E. Abramson.—p. 686.

Urine Test for Active Tuberculosis.—Gramén has applied Wildbolz' auto-urine test to fifty tuberculous persons and to several controls and found it invariably positive in the tuberculous, regardless of the site of the tuberculous process. He urges further trial of the method with a larger material, as it seems very promising. The great drawback is the tedious evaporation of the urine required for the test. The technic was described in these columns, Aug. 9, 1919, p. 456, and Dec. 18, 1920, p. 1755.

Steinach's Research on the Secondary Sex Characters.—Abramson gives a summary of Steinach's publications from 1894 to date, with a number of illustrations from them, and comment.

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*Physiologic Healing of Superficial Wound. R. Ingebrigtsen.—p. 1153.
*Diabetic Coma. H. F. Høst.—p. 1162.
*Calomel Diuresis. H. F. Høst.—p. 1171.
*Ligation of Hepatic Artery. S. F. Holst.—p. 1182.
*Pituitary Body and Its Disorders. K. Motzfeldt.—p. 1194.

Healing of a Superficial Wound.—Ingebrigtsen has been applying Carrel and du Nouy's mathematical calculations to the healing of a superficial wound, and gives the details of his seven cases. They confirm Carrel's statements on the whole, but the healing proceeded from one to four days faster than according to the calculations, and in one case sixteen days sooner than it should have healed according to Carrel. He thinks that the only explanation of this can be that the methods of treatment he applied, exposure to the sun and dressing with a 3 per thousand solution of silver nitrate, are more effectual than the Dakin solution which only sterilizes and does not stimulate. Hence it is now the practice to treat all wounds in his service with the extremely simple application of a 3 per thousand silver nitrate dressing in combination with exposure to sunlight or electric light.

Diabetic Coma.—Høst found the sugar content of the blood 1.28 per cent. the day before the man of 53 died in diabetic coma. The body seemed suffering from lack of water; no veins could be seen and not a drop of blood could be drawn from several punctures in the elbow region, explaining the high concentration of the sugar in the blood. Only 15 c.c. of urine could be drawn although 2½ liters of physiologic saline had been injected fourteen hours before. He comments on the reduction in the output of urine which precedes the outbreak of coma, and the diuresis which follows the subsidence of coma. These and other facts cited suggest that insufficiency on the part of the kidneys is an important factor in the development of diabetic coma.

Calomel Diuresis.—Høst reports the case of a man of 18 who began to develop dropsy two months after an attack of pericarditis with cardiac insufficiency. No benefit was derived from the usual drugs, and finally calomel was given in 0.15 gm. doses three times a day, continued for several days at a time, to a total of 1.5; 2.5 and 5.1 gm. at each series. He noticed that when the temperature rose a little, the subsequent sweating aided in reducing the weight although the amount of urine might be a little less. Under the calomel, the chlorid output in the urine also increased, but the chlorid content of the blood did not change. Once the chlorid content of the urine was much increased under the calomel, although the urine total was not increased.

Ligation of Hepatic Artery.—Holst had to ligate the hepatic artery in the course of a resection of the stomach. The operation took four and a quarter hours and required 235 gm. of ether, but the man seemed to be convalescing well when he began to grow weak and died eight and a half days later. This was explained by necrosis of the left lobe; the right lobe had obtained nourishment from a small artery found in the ligamentum teres, and it seemed to be normal. It is evident that if the sound hepatic artery is ligated, there is liable to be necrosis of the liver; if collaterals have already developed, the risk is much less. The few cases of ligation of the hepatic artery on record are compared with this case.

The Pituitary Body and Its Disorders.—Motzfeldt gives illustrated descriptions of a case of combined acromegaly and diabetes, two of acromegaly alone, and two of dystrophia adiposogenitalis. In the two last mentioned, the sella turcica and visual field are normal. In the first case the diabetes subsided after an intercurrent typhoid fever, which seemed to have cured the diabetes completely. In all the three acromegaly patients the sella was enlarged, which suggests that the derangement in carbohydrate metabolism is the work of the hypophysis itself. The adiposogenital dystrophy seems to be more of a general endocrine disturbance.

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Nov. 25, 1920, **82**, No. 48

*Action of Sunlight on Syphilitic Eruption. C. Rasch.—p. 1475.
Syphilitic Cervical Spondylitis. A. Wimmer.—p. 1478.

Action of Sunlight on Syphilitic Eruption.—Rasch remarks that the case of which he gives illustrations testifies that sunlight or the pigmentation which it induces may have an inhibiting action on an extensive papulous syphilitic eruption of several months' standing. The whole body of the young woman was studded thick with the papules up to the line of the covered portions of the body. Above this, where the skin was sunburned, the skin was apparently normal. This suggests, he says, that the sunlight may be an accessory factor in the benefit from courses of treatment at the Arkansas Hot Springs, Aix, and similar resorts.

Dec. 2, 1920, **82**, No. 49

*Treatment of Torpid Ulcers. J. F. Fischer.—p. 1501.

Treatment of Torpid Ulcer.—Fischer reports excellent results from treatment of sores with a combination of animal tissue juices and secretions. He experimented in particular with pancreatic juice, pepsin and saliva, his choice finally falling on a mixture of serum, saliva, and extract of the pancreas, with 0.5 per cent. phenol. He applies it to the ulcer on a thick gauze compress moistened with the fluid.